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Vol. 4. 1914. No. 7.

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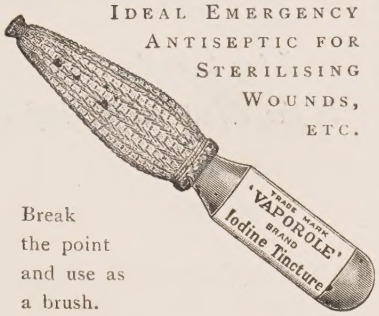

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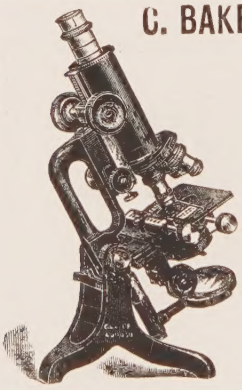

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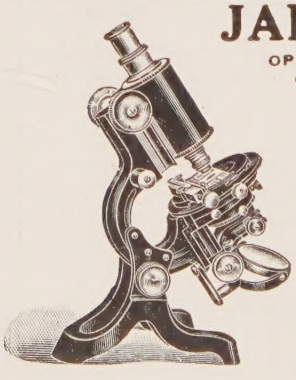

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TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 4.] 1914. [No. 7.

MALARIA.

LEGENDRE (J.). **Le Paludisme à Tananarive.**—*Bull. Soc. Path. Exot.* 1914. Feb. Vol. 7. No. 2. pp. 105–109. With a Map.

Index Endémique du Paludisme et sa Prophylaxie à Tananarive (Madagascar).—*Ann. d'Hyg. et Méd. Colon.* 1914. Apr.-May-June. Vol. 17. No. 2. pp. 531–535.

The malarial endemic index, as shown by a spleen survey in children between seven and fourteen years of age, is high at Tananarive. The unhealthiness of the place is due in large measure to the presence of rice fields in its neighbourhood. These in certain parts are arranged in tiers, one above the other, and so cannot harbour the small cyprinodont fish which are present in the irrigation canals. In their absence the mosquito larvae possess no other enemies.

The author advocates a system of pisciculture, stating that the small fry greedily devour mosquito larvae even when tiny crustaceans are present in abundance. The larger fish, having an alimentary value, should preferably be employed, reservoirs being provided for them where necessary. Another measure recommended is the periodic drying of the rice fields which, if properly carried out, does not damage the crops. The abolition of rice culture in the dangerous zone is not at present attainable.

A. Balfour.

MATHIS (C.) & HEYMANN (P.). **Nouvelles Recherches sur l'Index Endémique du Paludisme au Tonkin.**—*Bull. Soc. Méd. Chirurg. de l'Indochine.* 1914. June. Vol. 5. No. 6. pp. 223–237. With a map.

The authors have sought to establish an endemic index for malaria in Tonkin where all the species of the malarial parasite are present. They have done so by examining stained blood films from 2,458 indigenous children (ages not stated). In their opinion such an haematological index is to be preferred to a splenic index because it is more exact, has a more definite value, and the necessary examination is more easily and quickly carried out.

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Tables and a map show the result of their investigations in 1912–14. The latter also shows the results obtained by the enquiry instituted by Mathis and Leger, in 1909–10. At this time the index figure was 6·6 (232 infections in 3,493 children examined). Now the figure is 6·1 [? 5·7] (140 infections in 2,458 children examined). Further, it has been found that the endemic malaria is very unequally distributed, not only in the different regions explored but in neighbouring parts of individual localities. This shows the necessity of carrying out careful investigations on a large scale before instituting a general anti-malarial campaign.

A. B.

Bahr (P. H.). **Studies on Malaria in Ceylon. With Special Reference to its Prevention in Agricultural Districts.**—*Parasitology.* 1914. June. Vol. 7. No. 2. pp. 135–156. With 6 plates and 2 maps.

This is to all intents and purposes the same paper which was summarised in this *Bulletin*, Vol. 2, No. 11. There are a few additions as, for example, a list of the Ceylon anophelines collected by Dr. Bahr, while the additional information with which the author furnished the reviewer is now incorporated in the text, and adds to the value of a paper the merits of which have already been extolled.

A. B.

Stiles (Ch. Wardell). **Mosquitoes and Malaria. Report on a Short Trip in Eastern North Carolina.**—*U.S. Public Health Rep.* 1914. Sept. 4. Vol. 29. No. 36. pp. 2301–2311.

Professor Stiles, after a mosquito survey of the towns of Kinston, Moorehead City, and Jacksonville in Eastern North Carolina, divides the question into what he calls an internal or intra-urban, and an external or extra-urban problem. He decides that the former is the one which first merits attention, and gives an account of the kind of places in which he found mosquito larvae. Many of these owed their existence to the gross carelessness of householders. Thus, tin cans, paint pots, buckets, bottles, barrels, boxes, kegs, old iron safes or stoves, and boats, were implicated. The mosquitoes found in such breeding places were *Stegomyia fasciata*, now renamed *Aedes calopus* by Knab of Washington, *Culex pipiens* and *Culex quinquefasciatus*.

In certain instances anopheline larvae were captured, belonging probably either to *A. punctipennis* or *quadrimaculatus*. In the towns drainable standing water had also to be taken into account, and in this connection the author notes what has been observed elsewhere, that rainfall might cause a temporary decrease in the number of mosquitoes, and consequently in the amount of malaria, owing to the rain washing out the pools and carrying the larvae and pupae away to a creek which contained fish.

He discusses the respective responsibilities of the householder and the Municipality in an interesting manner, though naturally this portion of his paper has chiefly a local interest.

The extra-urban problem is a question of dealing with marshes, and is associated with agricultural and economic considerations which Stiles refrains from discussing in detail.

A list of the mosquitoes collected, classified by KNAB according to genera and species and also arranged according to locality and breeding places, concludes the paper. In addition to those mentioned, the mosquitoes found in stagnant water were *Aedes trivittatus*, *Culex restuans*, *C. salinarius*, *C. territans* and *Psorophora* (*Janthisonia*) *columbiae*. A. B.

HYDE (Fritz Carleton) **An Epidemic of Malaria at Greenwich, Conn.** —*Amer. Jl. Trop. Diseases & Prevent. Med.* 1914. Sept. Vol. 2. No. 3. pp. 199–204.

Malaria was present in epidemic form at Greenwich, Connecticut, during 1912, and caused considerable stir, for the town is rich, the home of numerous millionaires, and for a time little or nothing was done to check the disease. Hyde gives a brief description of the town and states that malaria has long been endemic in New Jersey, New York, Connecticut and Rhode Island. So far as Greenwich was concerned the causal mosquito was *Anopheles maculipennis*, which found breeding places in many swamps, ponds, brooks and rivers. The malaria was of a benign type and only assumed the proportions of an epidemic in 1912–13. The author does not explain fully why the fever took on this epidemic form. [Presumably climatic conditions favoured mosquito prevalence, and perhaps the number of possible breeding places had been artificially increased.] Chronic carriers were present in abundance.

Once public opinion had been aroused, the remedial measures taken quickly effected an improvement. They were of the usual type—educational and drainage and levelling operations, together with petrolage.

[The paper is not very satisfactory, and is evidently the work of one but little experienced in tropical hygiene. No spleen survey seems to have been made, and the exact species of malarial parasite is not mentioned, though we may infer that it was *P. vivax*. At the same time the preventive measures were apparently conducted with energy and success once they had been instituted. Nothing is said about the administration of quinine, or the screening or systematic treatment of the carrier cases.]

In the discussion which followed BASS mentioned that it is quite possible to have a quick macroscopic agglutination test for *P. falciparum*. Failure to find agglutinin in benign tertian malaria is possibly due to insufficient investigation. A. B.

von EZDORF (R. H.). **Malarial Investigations in the United States by the U.S. Public Health Service.**—*Amer. Jl. Trop. Diseases & Prevent. Med.* 1914. June. Vol. 1. No. 12. pp. 855–860.

An outline of the measures being adopted in the United States for the furtherance of an extensive anti-malarial campaign in the southern territories. These are very complete and are classed under the headings, Statistical, Publications, Educational, Surveys (malarial index), Demonstrations and Research. There is nothing new, but any sanitary authority undertaking similar work will find this paper useful. A. B.

Celli (A.). La Malaria in Italia durante il 1912.—*Ann. d'Igiene Sperimentale.* 1914. Vol. 24. N.S. No. 2. pp. 177–243.

This is Professor Celli's fifteenth annual report on the progress made in combating the scourge of malaria in Italy.

The task of combating malaria in countries situated in temperate climates differs from the problem as met with in the tropics, in that the mosquito season in cool climates is a very short one, so that the major part of the difficulty consists in dealing with chronic and relapsing cases. In a paper by Falcioni abstracted for this *Bulletin* [Vol. 3, p. 47] it is pointed out that the incidence of malaria in rural districts in Italy often goes up in spring long before the time for the appearance of mosquitoes arrives, the reason being that the resumption of hard work in the fields about the month of April brings out the disease in latent cases. As the Italian hygienist puts it, there is an immense reservoir of old cases of malaria in countries like Italy, from which the mosquito draws his supply of parasites for infecting new ones, and to dry up this reservoir may under certain circumstances be practically more advantageous than to deal with the mosquito directly. There is a great deal that is sound in this argument, which, of course, must be tested by results. The approved method of dealing with the scourge of malaria in Italy is consequently worthy of the attention of those engaged in a similar contest elsewhere, as for example in the tropics, where perhaps the most pressing need is to protect the newly-arrived white man from infection. The assiduous cinchonization of the whole population of malaria districts during the summer, especially of the children who for various reasons are the most liable to infection, is placed in the forefront of the measures adopted for combating the scourge of malaria in Italy by sanitarians, though the continuous treatment of chronic cases is not overlooked. The enormous amount of 22,000 kilogrammes, or about 50,000 pounds of quinine is distributed annually by the State in Italy for this purpose, while the consumption on private account amounts to about 18,000 kilos in addition. The result as regards the reduction in the annual number of deaths from malaria in Italy is indicated in a very striking chart given by Professor Celli on page 191 of his memoir. In this it is shown that, while in the year 1887 there were in round numbers 22,000 deaths from malaria in Italy, the number had sunk in 1912 to only 3,000 ; and the chart shows that a very large proportion of this decrease only dates from 1902, in which year the distribution of quinine by the State commenced.

There are a great many other interesting points in Professor Celli's memoir, amongst which may be noticed the proposal to try quinetum and other similar amorphous preparations of the cinchona alkaloids in order to reduce expense. The chocolate tablet suggests itself as a very eligible form for administering these otherwise rather unsightly and nauseous preparations of cinchona. As representing a distinct side of the great problem of combating malaria Professor Celli's report merits perusal in its entirety by those who are sufficiently acquainted with the Italian language.

J. B. Nias.

i. Celli (A.). **La Malaria in Italia durante il 1912.**—*Propaganda Antimalarica.* 1914. June 30. Vol. 7. No. 3. pp. 49–58.

ii. Cardamatis (J.). **Comment on détruit les Parasites Palustres par la Quinine.**—*Ibid.* pp. 59–61.

iii. Parrot (L.). **L'Enseignement Antipaludique à l'Ecole.**—*Ibid.* pp. 62–64.

v. Rossi (G.). **Il Rimboschimento delle Dune nei Riguardi Igienici anche in Rapporto colle Bonifiche Idrauliche.** [The Planting of Sand-dunes in its Hygienic Aspects, and in Relation to Drainage Works.]—*Ibid.* pp. 65–69.

v. Campbell (C.). **Il Rimboschimento delle Dune nei Riguardi Forestali ed Agrari anche in Rapporto colle Bonifiche Idrauliche.** [The Planting of Sand-dunes in its Sylvan and Agricultural Aspects, and in Relation to Drainage Works.]—*Ibid.* pp. 70–78.

vi. Rossi (G.). **Sulla Dottrina Sanzaro-Malarica.** [On the Mosquito-Malaria Theory.]—*Ibid.* pp. 78–82.

vii. Di Giovine (Attanasio). **La Campagna contro la Malaria del 1913 in Lucera.**—*Ibid.* pp. 83–85.

i. The first part of an article reprinted from *Annali d'Igiene Sperimentale* [see above].

ii. A description of the process of disappearance of malarial parasites from the blood under treatment with quinine when studied microscopically. The annular forms and gametes, with the chromatin mass in a state of division, are the last to disappear, and treatment should be continued until they can no longer be found in stained preparations of the blood.

iii. Discusses the instruction to be given to pupils in elementary schools on the subject of malaria.

iv & v. Discuss from different points of view the problem of encouraging the growth of vegetation upon sand-dunes. The result may be to dam up the natural drainage of the land and create marshy pools, which will contribute to the development of malaria. Belts of woodland, under such conditions, should be no wider than necessary, and deciduous trees, like the eucalyptus, the poplar and the cork-oak will be more suitable than conifers from their greater evaporative power, if they can be persuaded to grow. In such localities, where the subsoil is generally cool and moist, the peach will be found to grow well behind the shelter of the timber-belt, and may be expected to give particularly remunerative results.

vi. Is a controversial article in reply to one by Sergi in the number of the same periodical for April 30, 1914.

vii. Is a report on the anti-malarial campaign in 1913 for the district of Lucera in the province of Capitanata. Eighty-three cases of malaria in all came under treatment, of which nearly one-half were in children. There were no deaths. In addition 821 persons were treated prophylactically.

J. B. N

Ross (Ronald). **Malaria in Cyprus and Greece.**—*Proc. Roy. Soc. Med.* 1914. Mar. Vol 7. No. 5. (Sect. of Epidemiology & State Med.) pp. 107-115.

A paper embodying the remarks made by Sir Ronald Ross when giving a lantern demonstration before the Epidemiological Section of the Royal Society of Medicine. After some preliminary considerations, during which he passed in review the antimalarial work accomplished on the lines he indicates in Hong-Kong, Havana, Ismailia and the Federated Malay States, the author proceeds to discuss the situation in Cyprus and Greece. Cyprus, he says, is an ideal place for mosquito reduction because of the smallness of the rainfall. Rain begins in September and falls fairly heavily up to January, but thereafter it diminishes and from April onwards there is a season of drought. As anophelines require a warm temperature as well as water, and as the rainfall occurs in the cold months, they only begin to breed in March, and are found in river pools, in water from irrigation works and village supplies allowed to run to waste, and in the village wells. They are not found in the large irrigation tanks because the larvivorous fish get at them readily in these water collections. Ross conducted a spleen survey amongst the children between three or four and fifteen years of age, and in some places found that the " spleen-rate " was 100 per cent. Under 10 per cent. the rate may be considered low. The average worked out at 21 per cent., a very high rate for a European country. The death-rate for the whole island is returned as only 17 per mille, but the statistics are probably unreliable. There is no regular Sanitary Department, but the Medical Department is very active and efficient. An interesting investigation was carried out in London by the author and Majors CHRISTOPHERS and PERRY. They studied the spleen-rates in the heart of London with a view to determining what is really an enlarged spleen. As a result Ross declares that if one can just touch a spleen under the ribs it is probably pathological ; at least, if this can be done in over 2 per cent. of the children examined, one may pretty safely conclude that the condition is not normal [see this *Bulletin*, Vol. 3, p. 259].

The breeding places in different parts of Cyprus are described, the formation of a Sanitary Department is advocated, and the necessity for an anti-mosquito campaign, supplemented by quinine therapy in certain parts, enjoined.

As regards Greece, it is shown that malaria occurs in the valleys of that mountainous country. Wherever people can live, *i.e.*, close to water, there malaria thrives with disastrous results. Mention is made of the beneficial results of the work of the anti-malaria league, and the importance of seeing that when quinine is issued it is a pure product and not a powder which is half flour. Both in Cyprus and in Greece the value of training streams is insisted upon. The " fourteen factors " concerned with the malaria question are mentioned, but not fully expounded, though in the discussion which followed the reading of the paper some of them are mentioned.

A. B.

Regnault (Félix). **Du Rôle du Dépeuplement, du Déboisement et de la Malaria dans la Décadence de Certaines Nations.**—*Rev. Scientifique.* 1914. Jan. 10. Vol. 52. No. 2.. (1er sem.) pp. 46–48.

The nations considered are Greece, Italy and Spain. It is in the case of the first two that the dire effects of malaria have been chiefly in evidence. In Spain, Andalusia seems to have been the only part heavily affected. In all three countries the same causes, i.e., devastating wars, ill-advised legislation, dissolute habits, a low birth-rate and great emigration have played a part in bringing about depopulation and decay, but the author insists on the important rôle of deforestation followed inevitably by malaria wherever conditions were suitable for anophelines to live. Ross thought that mosquitoes were probably imported into ancient Greece, possibly from Egypt, but Cawadias has shown that malaria was always present. It merely became widespread when the folly of the inhabitants had brought about a state of things favourable to its transmission. Nowadays we are able to safeguard countries against the ruin which befel these territories, the causes of which are briefly reviewed in this interesting historical paper.

A. B.

Abelardo Lara N. **La Cirugia y el Paludismo.**—*Revista Med. de Yucatan.* 1914. Aug. Vol. 9. No. 10. pp. 217–219.

An account of a case operated on for chronic appendicitis. While under the anaesthetic alarming symptoms of collapse occurred. The patient's temperature was found to have risen markedly, and it was evident that he was suffering from cerebral congestion. Despite the injection of a gramme of quinine and the use of restoratives the patient died.

The author discusses the cause of death and decides that the fact of crescents being found in blood films made a few minutes after death points to the congestion being of malarial origin. He argues that the operation, together with the chloroform, brought about a pernicious attack of comatose type in a patient suffering from latent malaria, the latency being due to previous treatment with quinine. He concludes with the very necessary warning that in the case of patients coming from regions where malaria is endemic no operation should be performed until the blood has been carefully searched for haematozoa.

[This paper raises an important point, and one apt to be forgotten in this country. The reviewer recalls a sad case, in which an apparently strong and healthy patient from the tropics, operated upon successfully for renal calculus, developed malaria and then what was probably a malaric pneumonia, to which he succumbed. Surgeons in temperate climates cannot be too careful when called to operate upon patients from the tropics, in seeing that the latter are not harbouring blood parasites. In some cases, guided by the history, it would be well, even if no malaria parasites are found in the peripheral blood, to prescribe a course of quinine before operating, provided the case is not one of great urgency.]

A. B.

Southern Medical Journal. 1914. Sept. 1. Vol. 7. No. 9. pp. 687–693. **Surgeon General Gorgas' Report on Malaria and Blackwater Fever in Southern Rhodesia.**

Surgeon-General Gorgas prefaces his report by a letter to the Editor of the above journal, in which he states that he was asked by the English authorities to report on the state of Southern Rhodesia with respect to malaria, which is seriously hampering the development of that country. The letter also contains a few topographical and historical notes. In the report itself, which is the outcome of a visit he made in the company of Major Noble and Dr. Darling, he refers to the fact that countries once intensely malarious have frequently been rendered healthy by settlement and cultivation. As a good example he mentions the regions of the United States now represented by Indiana, Illinois and Michigan, which fifty years ago were notorious for the amount and severity of their malaria. He was told by Dr. Fleming that the same thing was happening in parts of Southern Rhodesia.

After some general remarks on malaria, and notes on the work accomplished in the Panama Canal Zone, Gorgas turns to the question of blackwater fever, which he is inclined to regard as a phase of malaria. Whatever its cause, however, he points out that the measures taken to prevent malaria will prevent blackwater fever, and hence there is no use waiting till the etiology of the latter is fully worked out. Preventive measures should be taken in hand at once. At the same time, he considers that the Rhodesian Government would do well to establish a laboratory for original research into human diseases generally, and more especially into blackwater fever.

He does not think that the cause of sanitation would be helped by the local government financially assisting recent settlers. He considers that money would be better spent in improving and advancing the campaign of education already begun by Dr. Fleming. He indicates the lines along which it should proceed and also approves the suggestion that the Government should sell quinine in malarious districts at cost price.

The other measures he advocates are :—

1. Daily prophylactic dose of 5 grains of quinine for settlers and their native servants.
2. Mosquito-proof dwellings.
3. Clearing and draining within two hundred yards of the habitation.
4. The use of a properly constructed mosquito net at night.

He specially urges the municipality of Salisbury to free that town from mosquitoes. As he very truly remarks, it cannot but have a bad effect upon the farmers from malarious districts to find these insects numerous in the capital of the country.

A. B.

Report of Executive Committee of the South African Anti-Malaria Association for the Period ended 30th June, 1913, and Proceedings of the Third Annual Meeting of Members.—18 pp. 1913. Johannesburg: Argus Printing & Publishing Co., Ltd.

Of late years a gratifying amount of activity has been shown as regards an anti-malarial propaganda in South Africa. The South

African Anti-Malarial Association, which has General Botha as one of its patrons, has issued a number of useful pamphlets printed both in English and the Taal.* Thus, for purposes of public instruction we have "A Summary of Facts regarding Malaria," by Sir Ronald Ross, for use in schools an illustrated monograph on the Anopheline Mosquito, by R. C. Dauglish, and papers dealing with "Fever on the Farm," the foundation and management of local anti-malarial associations, etc. Illustrated cards in English, Dutch, Zulu and the Basuto tongue have also been prepared and issued.

The Report of the Executive Committee of the Association for the period ended June 30th, 1913, has recently appeared. It is noticeable that, despite a comparatively small rainfall, malaria had been more than usually severe in 1913, especially in the Northern Transvaal, due probably to a "flock migration" of anopheline mosquitoes. Where the injunctions of the Association have been carried into effect the disease has been kept at bay.

Larvivorous fish have been tried in certain districts, "Millions" from the West Indies being employed. At Potchefstroom and Zululand they flourished for a brief space and then vanished, having apparently been devoured by natural enemies. These sent to the hatcheries at Stellenbosch did better, but proved susceptible to cold.

The outlook is, however, stated to be encouraging.

[While the Association is to be congratulated on its energy and success, it is disappointing to see that donations and subscriptions for a period of more than one year amounted to less than £300. It is to be hoped that ere long this useful and humane work will receive adequate monetary as well as official support.]

A. B.

Henson (Graham E.). **The Value of and Necessity for an Early Diagnosis in all Malarial Infections.**—*Southern Med. Jl.* 1914. Aug. 1. Vol. 7. No. 8. pp. 603–608.

This is an address which, though it contains nothing new, reiterates some of the useful advice which appeared in his recently published book (see Review in this *Bulletin*, Vol. 3, p. 59). He again points out that gametes cannot develop in the blood of man if an original malarial infection is properly treated. He also reminds his audience that the sporozoites and other forms of plasmodia cannot

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* Faure (Jacobus C.). **Mosquitoes and Malaria.**—22 pp. With 13 figs. Reprinted from the Union Agricultural Journal and issued by the South African Anti-Malarial Association. Publication No. 8, 1914. [Also in Taal.]

Ross (Ronald). **Malarial Fever: How it is Caused and how it may be Prevented.**—8 pp. With 3 figs. Written specially for and issued by the South African Anti-Malarial Association. [Also in Taal.]

How to form and carry on Local Anti-Malarial Associations.—13 pp. With 1 fig. Issued by the Executive Committee of the South African Anti-Malarial Association. 1912.

Boloetse ba Letsboroma (Malarial Fever). Health Pamphlet (Sechuana) No. 12.—7 pp. The South African (Native & Coloured) Health Society. Issued by the South African Anti-Malarial Association.

Hay (G. G.). **Fever on the Farm. Some Common Causes.**—*Rand Daily Mail* 1914. Mar. 24. [Also in Taal.]

Conquest of Malaria. The Views of Surgeon-General Gorgas. Interviewed by Dr. William Macdonald. Reprint issued by the S. African Anti-Malarial Association. Publication No. 9. [Also in Taal]; and others.

exist in the body of the mosquito when the temperature reaches a level of 60° F. All that he says is very sound, but perhaps the only other portion of the address to which attention should be here directed is that dealing with the best time to make a blood film for diagnostic purposes. Henson states that a good general rule to adopt is to take smears between three and five hours *after* sporulation. The occurrence of sporulation is characterized by the chill, or, in the absence of a chill, by an exacerbation of clinical symptoms.

He cautions against faulty teaching in this respect and discusses the risk resulting from delay in diagnosis, and in the institution of specific treatment by quinine. He holds that in the very large majority of cases a delay of one or two days, during which non-specific symptomatic treatment is employed, will do the patient less harm than the too universal habit of making a diagnosis of malaria in all cases of chills and fever. In this connection he cites the harm that may be done in tuberculosis, appendicitis, endocarditis, septic cholecystitis, pyelitis, and many other conditions which may closely simulate a malarial attack.

[It is much to be desired that all medical men would take an equally stringent view of the necessity of early diagnosis in, and thorough treatment of, malaria. If they would only do so, more than half the battle would undoubtedly be won.]

A. B.

Brau (P.). **De l'Urobilinurie dans les Congestions Hépatiques d'Origine Palustre.**—*Bull. Soc. Path. Exot.* 1914. July. Vol. 7. No. 7. pp. 596–598.

The author states that he has independently confirmed the work of Atkinson, of Hong Kong, who in 1913, by the use of Schlesinger's test, demonstrated the presence of urobilin in the urine of malarial patients (see this *Bulletin*, Vol. 2, p. 221). Brau observed that in a series of cases of liver congestion with fever, all of which were supposed to be due to dysentery, and in which the Schlesinger reaction was positive, a certain number did not benefit from treatment with emetin. Although no malarial parasites could be found, there was some increase of the large mononuclears, and the hepatic condition yielded readily to quinine, proving not only that they were cases of paludism, but that the urobilin is of value in these forms of malaria which, owing to the absence of parasites in the peripheral blood, are difficult to diagnose by ordinary methods. [Brau does not seem to have seen the useful paper by Acton and Knowles which was reviewed in Vol. 2 of this *Bulletin*, p. 321.]

A. B.

Barlow (Nathan). **Rheumatic Malarial Fever.**—*Amer. Jl. Trop. Diseases & Prevent. Med.* 1914. June. Vol. 1. No. 12. pp. 865–867.

The author, who writes from Honduras, states that he has recently had eight cases under his care which he believes were examples of a rheumatic form of malarial fever. In such cases treatment with alkalies and salicylates is contra-indicated, as these drugs aggravate

the pain, prolong the course of the disease and make the condition more resistant to quinine.

The symptoms are at first those of a neuralgia, or there may be herpes zoster, severe lumbar or sacral pain, or a multiple arthritis. The joints are involved in rapid succession, and there is the same tendency for the infection to jump from one to another that is found in articular rheumatism. The affected joints are not hot or red, and are much less swollen than in rheumatism. The exquisite pain of severe cases of rheumatism is never seen. The swelling is partly within and partly without the joint, is entirely serous in character, and leaves no perceptible changes on subsiding. A simultaneous carditis, or pericarditis, may occur, completing the picture of rheumatism. Each occurred once in this series, but upon recovery the heart and pericardium were clinically normal in each case.

Fever may be very slight or absent. It is rarely as high as in rheumatism, and there is usually not more than one rise in any one day. The profuse sweating of rheumatism does not occur.

Barlow considers that the condition indicates a severe form of malaria and is apt to be followed by malignant complications. Indeed, one of three cases, the clinical history of which he briefly records, developed a violent delirium and died. The treatment consists in pushing quinine to the limit of toleration and continuing it with moderate doses of bromide. A single daily intravenous dose of 15 to 25 grains each of quinine bichloride and sodium bromide in a litre of freshly distilled water should be given for one or two days in all cases of this kind. Aspirin in a single dose of 5 to 8 grains daily may be used to relieve pain. A larger quantity will merely aggravate it. The author insists on the necessity for blood examination in the case of every patient admitted for what is apparently rheumatism.

[Although it is known that malaria is a very protean disease and may simulate almost any complaint, and although this rheumatic type has been already described, the above paper is distinctly useful as serving to keep the medical man on the *qui vive* and teaching him to be on the outlook for aberrant forms of the disease. Further, the notes on treatment are of value, for such cases are very apt to baffle the therapist.]

A. B.

Annales d'Hygiène et de Médecine Coloniales. (Clinique d'Outre-Mer.) 1914. Apr.-May-June. Vol. 17. No. 2. pp. 595–597. **Deux Observations de Paludisme avec Hémorragies Rétiniennes (Hôpital de Tananarive).**

These are brief clinical accounts of two cases of malaria in French soldiers due to *P. falciparum*, in which retinal haemorrhages occurred. In the first case the eye condition supervened upon a rapid malaria, anaemia, the second was a neuropapillitis probably due to an oedemal the result of a malarial anaemia. Both cases cleared up rapidly under quinine and tonic treatment. Chloride of calcium was also given to one of the patients.

A. B.

Alliot. **Observation d'Accès Pernicieux à l'Hôpital Colonial de Saint-Louis.**—*Ann. d'Hyg. et Méd. Colon.* (Clinique d'Outre-Mer). 1914. Apr.-May-June. Vol. 17. No. 2. pp. 577–579.

A child, four years old, was admitted to hospital suffering from coma and high fever which were diagnosed, apparently without blood examination, as being due to malaria. The father and mother had suffered from paludism, and the brothers and sisters presented signs of tropical anaemia. The child, in addition to being comatose, had conjugate deviation of the eyes, was in a state of collapse, and passed from one convulsion to another, being apparently on the point of death. The treatment, which at first consisted of quinine injections, 0·25 gramme and 0·50 gramme, presumably given intramuscularly, an ice cold bath, ice to the head, an enema and a dose of bromide of potassium and antipyrin, proved efficacious, resulting in complete recovery after a repetition in some measure of the above therapy.

A. B.

Britto (Alfredo). **Um Caso de Nevrite do Motor-ocular Commun e do Pathetico de Origem Palustre.** [A Case of Malarial Neuritis of the Third and Fourth Cranial Nerves.]—*Brazil Medico.* 1914. July 22. Vol. 28. No. 28. pp. 269-272.

An account of the case of a young man, 27 years of age, a native of Bahia in Brazil and resident at Periperi, who was found to be suffering from a form of ocular paralysis.

The right eye was affected, there being paralysis of all the muscles except the external rectus, associated with a constant and marked dilatation of the pupil. There was also ptosis of the right eyelid. The author carefully discusses the nature and site of the nerve lesion considering the possibility of damage to the central nuclei, and the question of tumour, gumma, etc. A differential leucocyte count showed a marked increase of large mononuclears, some eosinophilia and a diminution in the polymorphus and lymphocytes. Malarial parasites and pigment-bearing mononuclears were present in the blood. A diagnosis of a malarial neuritis of the third (Motor-oculi) and fourth (Patheticus) cranial nerves was arrived at, and energetic treatment with quinine effected a cure.

A. B.

Russell (R. F.). **Malarial Fever with Severe Cerebral Symptoms.** [Memoranda.]—*Brit. Med. Jl.* 1914. Sept.12. pp. 470–471.

A negro boy, aged 11, was admitted into an hospital in Jamaica in a comatose state and apparently in a dying condition. His spleen was slightly enlarged and his temperature registered 104° F. Malaria was diagnosed, and under treatment with what the author terms "hypodermic" injections of quinine hydrochloride and the application of ice to the head complete recovery ensued, although on the fourth day after admission and after quinine by the needle and by oral administration, he had frequent epileptiform convulsions, for which he was given sodium bromide and chloral hydrate.

There was, unfortunately, no blood examination made. This detracts from the value of the record, though the case was almost certainly one of malaria. It is stated that 95 per cent. of malaria cases from the district in which the boy lived are of the sub-tertian variety.

A. B.

Deaderick (William H.). **Herpes Zoster and Malaria.**—*Med. Record* 1914. Sept. 5. Vol. 86. No. 10 [Whole No. 2287]. pp. 421–422.

The author points out that the association between herpes zoster and malaria is well known, and cites several authors who have drawn attention to it. He specially mentions papers by Winfield, who reported thirty-three cases of herpes zoster, in eighteen of which malaria was found. He then gives notes of eight cases of herpes zoster observed by himself, five in coloured folk and three in whites. Five of the cases were associated with malaria of the aestivoautumnal type, two of these patients being coloured and three white. Deaderick states that the negro has a relative immunity to simple herpes and many other complications of malaria.

A. B.

Cohen (Solomon Solis). **Note on the Superiority of Intramuscular Injection over Administration by the Mouth in the Treatment of Malarial Infections by Quinin and the Availability of Quinin and Urea Hydrochlorid for this purpose. Technic of the Injections.**—*Amer. Jl. Trop. Dis. & Prevent Med.* 1914. Aug. Vol. 2. No. 2. pp. 124-129.

In a recent note on the value of intramuscular injections of quinine in malaria [see this *Bulletin*, Vol. 4, p. 290] the reviewer took occasion to cite the employment of a similar method of treatment in pneumonia by Dr. Solis Cohen, of Philadelphia. Curiously enough, the latter now publishes a paper strongly advocating intramuscular quinine injections in malaria, affirming the superiority of this method over oral administration, and recommending the use of quinine and urea hydrochloride (quinine-carbamid dichloride) as possessing a greater value than the other salts of the quinine alkaloid. It is not, however, suitable for intravenous use. The author is unable to say whether the greater and prompter activity of the quinine-carbamid compound is the result solely of its ready solubility, or whether some special physico-chemical property is also operative, but he states that there can be no doubt as to its efficiency. It was found by de Schweinitz that, grain for grain, it possesses a greater toxicity than any other preparation of quinine which he tested during his research upon toxic amblyopia.

Cohen quotes statistics to show that, taking the promptness of control of paroxysms and the length of the fever-free period after a single dose as a test of relative efficacy, there can be no doubt that, whatever be the quinine preparation employed, the intramuscular method is immeasurably superior to the oral.

The quinine-carbamid compound can also be given by the mouth, and in ordinary cases of malaria the author's practice is as follows :—

"Either injections are given daily for a week, then weekly for a month, and then fortnightly for another month, or, after three injections, two doses of the quinine and urea compound, of 10 or 15 grains (0·6 to 1 gm.) each, are given daily, by mouth, in capsule—one in the morning, about 15 to 30 minutes before breakfast; and the other 4 to 6 hours later, and likewise when the stomach is empty. As with the injections, the stomachal administration is kept up daily for a week, repeated weekly for a month, and then continued fortnightly for another month.

"After that the patient is advised to take quinine in some form by the mouth, in doses of from 15 to 30 grains, at least once a month for three months more, to have his blood examined monthly, and at the first suspicion of recurrence in any form, to seek medical advice."

One finds that Cohen considers 15 grains a suitable dose for injection. He states that he has not had much experience of pernicious malaria, but he believes that the quinine and urea compound would be very suitable in such cases if given in sufficiently large doses and repeated as frequently as necessary.

He concludes the paper by an account of the technique which he has adopted and which during twenty years' experience he has found to safeguard, so far as he can tell, every point of danger. As so much has recently been written on the supposed drawbacks to intramuscular injections of quinine, we quote it in full :—

"1. The solution is to be prepared extemporaneously, all utensils being thoroughly sterilized in advance, and kept sterile. The quantity of the salt to be employed (ordinarily 15 grains or 1 gm.) is dissolved in a syringeful of boiling water. The strength of the solution will thus be from 20 to 60 per cent., according to the size of the dose and the capacity of the available syringe. An optimum strength is 33·3 per cent., but I have used 40, 50, and even 75 per cent. solutions without accident.

"2. The skin is to be cleansed (preferably with tincture of green soap), and an area of about one inch in diameter is to be painted with tincture of iodin or iodin-acetone (10 to 20 per cent.).

"3. A high-pressure syringe, all glass, is preferable. The injection should be made deeply and the needle thoroughly emptied, so that upon its withdrawal retained solution shall not drip upon the punctured skin. As an additional precaution, the iodized skin may be covered with a piece of thin rubber-tissue, stretched taut, through which the puncture is then to be made. This, however, is not commonly necessary.

"4. The point of puncture should be sealed with collodion, or, better, with iodoform-collodion."

A. B.

CLARKE (J. Tertius). **Intramuscular Injections of Quinine.** [Correspondence.] *Jl. Trop. Med. & Hyg.* 1914. Sept. 1. Vol. 17. No. 17. p. 272.

Dr. Clarke, of Perak South, writes a very sensible letter on the above subject. He appeals to clinical experience, pointing to the fact that intramuscular quinine injections, if properly administered, are both safe and efficacious in cases of malaria. So far as the Malay Federal States are concerned, he states that "on some estates the coolies are so convinced of the superiority of the intramuscular method that even though they cannot be persuaded to take the quinine by the mouth they actually ask for the injections." His experience with Europeans is somewhat similar, and local medical opinion is unanimously in favour of intramuscular injections. One of his sentences no doubt expresses the thought of many tropical practitioners at the time, for he says

" Some of us feel that there may be something we do not know on the subject and would like enlightenment."

[Reference to several numbers of this *Bulletin* may help Dr. Clarke and others. The question is discussed briefly in Vol. 4, No. 5, p. 290. The reviewer has reason to think that a forthcoming paper by DEEKS and JAMES of the Panama Canal Zone may throw fresh light on the subject. It will be reviewed in due course.] A. B.

Ross (Ronald). **Intramuscular Injections of Quinine.** [Correspondence.] —*Jl. Trop. Med. & Hyg.* 1914. Sept. 15. Vol. 17. No. 18. pp. 286–288.

This letter by Sir Ronald Ross to the Editor of the Journal of Tropical Medicine and Hygiene merits careful attention.

At the outset he refers to the studies of KLEINE, JACOANGELI, MARIANI, MODIGLIANA, GIEMSA, SCHAUMANN, GAGLIO, SCHMITZ, MEGAW, MacGILCHRIST and others. He refers to the fact that *in vitro* a large amount of quinine is precipitated in the presence of various albumins, especially when the solution of quinine is a strong one. He also points out that experimental work has shown that the absorption of the drug by the alimentary canal is much more rapid and also more complete than when it is given subcutaneously or intramuscularly. He admits that if it is in weak dilution the absorption after injection is better, but this involves the use of large quantities of fluid.

He states further that injections often give rise to considerable local trouble and occasionally to severe local inflammation, and even to tetanus. [As pointed out in this *Bulletin*, Vol. 4, pp. 290–291, there is good reason to think that when such unfortunate sequelae occur they are due to faulty technique and not merely to the quinine, although it is true that sometimes an intramuscular quinine injection, given with every precaution, will leave behind it a slightly painful lump at the site of injection. One would like full information as regards the two cases cited in this connection by Sir Ronald Ross. He does not say what salt of quinine was employed, or in what dilution it was used.]

SANDRO'S argument that injection obviates the passage of quinine through the liver is regarded as of no weight, for there is no evidence to show that the drug is destroyed during such passage. Sir Ronald Ross is of opinion that quinine injections are only justifiable in special cases, i.e. where there are gastro-intestinal troubles preventing or delaying absorption, a state of things which he regards as rare, when patients cannot or will not take quinine by the mouth, and possibly for prophylactic use when it is desired to establish a " quinine depot " in the body, so that the drug may be continually fed, as it were, to the blood.

His strongest argument against those who favour the injection method is that they are relying on clinical evidence which has not been tested either scientifically or statistically. He asks for definite proof that injections extirpate the parasite more effectively than administration by the mouth. He indicates how fallacious ordinary clinical evidence may be, and concludes by saying that it is quite possible that some improvement might be made by which the injection method may be rendered more effective and less damaging to the tissues.

[Although one admits the validity of Sir Ronald Ross's main argument, and agrees that the proof for which he asks should be furnished, the fact remains that men are often driven to employ the injection method as the only means of relieving or curing their patients. African experience certainly shows that the gastro-intestinal troubles mentioned by Sir Ronald Ross are *not* rare concomitants. They are specially common in quartan malaria, and when they are present oral administration is very apt to fail. Moreover, it would seem that in serious cases of malaria, even though there is no evident gastro-intestinal upset, the absorptive power of the alimentary canal is greatly lessened or completely in abeyance, while that of the muscles is still effective. One cannot place wholly on one side the vast mass of clinical evidence which shows that intramuscular injection is of undoubted value in pernicious cases. The proof required by Sir Ronald Ross is undoubtedly needed, and should be supplied, but to wait until it is forthcoming before employing quinine injections at all would, in the reviewer's opinion, put back the clock, and in many instances expose malarial patients to an unjustifiable risk.

One knows that there already exist salts of quinine, such as quinine and urea hydrochloride, or the basic formate (quinoform), which, in the hands of competent clinicians, have yielded excellent results when given by injection. Let the method be improved, but not abandoned pending "scientific and statistical proof." It certainly seems that the wisest course is to employ both methods, as indicated in the reviewer's note in the number of the *Bulletin* already cited, and as advocated by Dr. Solis Cohen in the paper which is summarised in the present issue.]

A. B.

Werner (H.]. **Zur Therapie der Malaria und des Schwarzwasserfiebers.** [The Treatment of Malaria and Blackwater Fever.]—*Beihefte z. Arch. f. Schiffs- u. Tropenhyg.* 1914. June. Vol. 18. Beiheft 5. pp. 171–177. (pp. 327–333).

In this paper Werner deals with such interesting and diverse subjects as quinine-resisting strains of the malarial parasite, so-called pseudo-relapses, combined therapy, the value of Insipin and of the urobilin test, the surgical treatment of the anuria occurring in blackwater fever and the use of salvarsan in cases of this disease.

Hitherto quinine-resistant strains have been found chiefly in cases coming from Brazil, but Werner records their occurrence in German South-west Africa. He recognises an absolute and a relative resistance of the parasites to quinine therapy. In the former neither parasites nor fever disappear even after large doses. The latter is characterised by the return of the parasites to the peripheral blood after the usual prolonged treatment with quinine. The first condition is rare, the second not uncommon.

The author cites the results observed in connection with quinine prophylaxis during the Hottentot campaign of 1904–06. Although carefully carried out it was admittedly a failure. Not infrequently parasites were found in the peripheral blood of men who were not ill and had no fever. Eventually, in many cases, parasites were actually found while the patient was under quinine treatment and true symptoms of resistance to the drug developed.

Werner believes that two factors were operative: (i) An increase of resistance occurring in the warm-blooded host and following the piling in of quinine; (ii) A sustaining of this resistance during the passage of the sexual forms through the mosquito.

He does not think that this resisting capacity is increased during the latter cycle because the quantity of quinine in the insect's stomach must be infinitesimal.

Six cases of pseudo-relapse are mentioned in which there was a rise of temperature without the presence of parasites in the blood. Werner (1910) claims to have been the first to recognise this condition and complains that Ross and Thomson in their paper on the same subject make no mention of his work. In this class of case even salvarsan does not always succeed in preventing a relapse.

As regards combined therapy the simultaneous administration of quinine and salvarsan has been found useful. Even when the dose of each is reduced satisfactory results are obtained. Although methylene blue is toxic to rabbits, and has a comparatively slight specific action on the malaria parasite, it merits further consideration from the standpoint of combined therapy with the object of securing, if possible, the *Therapia sterilisans magna* of Ehrlich. Werner recalls his advocacy of the tasteless and efficient Insipin.* It is now prepared by Böhringer & Sons, Mannheim, in the form of chocolate tablets each containing 0·25 gramme. Six of these constitute the daily dose for benign tertian and tropical infections. Although specially useful in the case of children it may with advantage be given to adults, and is to be preferred to the tannate preparations both as regards tastelessness and the amount of quinine alkaloid present. Analyses have shown that it is excreted in the urine to a marked extent. As a result of observations made on 46 acute and latent cases the value of the urobin and urobilin tests as indicating a cure by quinine is rather discredited. The reaction is often slight, and, moreover, it occurs in beri-beri, enteric fever, gastritis, etc.

Ziemann, Krüger, Külz and Stannus [given as Stannes] have put to the test the author's ideas as to nephrotomy with or without decapsulation in urinary suppression accompanying blackwater fever. The results have not been encouraging, but show that decapsulation alone is not sufficient if the condition of the patient permits operative procedure to be considered.

In two cases Werner has given salvarsan without untoward results to patients in whom, during attacks of tertian malaria, quinine had caused haemoglobinuria.

A. B.

Parrot (L.). **Hydraulique Agricole et Paludisme.**—*Revue Agricole de Bône.* 4 pp.

Owing to the scanty rainfall during the dry season the wine growers on the plains of Bona have recourse to irrigation in order to increase the yield of their vineyards. Parrot, of Algiers, points out that as a result they run the danger of epidemic malaria. He refers to what occurred at Camargue when rice fields were installed there, to the

**Archiv. fur Schiffs- und Tropen-Hygiene.* 1912, Vol. 16, Beiheft 1. p. 37.

history of Ismailia, and of several other regions where irrigation works have been followed by outbreaks of malaria. As this irrigation is very necessary from an economic standpoint, it is essential that prophylactic measures against malaria be adopted. In the case of the large reservoirs the tanks should be cleared of aquatic plants, and systematic petrolage carried out. It is not necessary to oil the whole of a large water surface as mosquito larvae are not found in the deep central portions of the reservoir. [Curiously enough, nothing is said about the possible value of larvivorous fish in these water collections.] Wherever possible, irrigation canals should be concreted. When this is impossible the banks must be kept clean and all water weed removed.

Where there is only a slight fall, and in the case of the smaller irrigation channels, closed cement tunnels are indicated, reinforced cement being employed to withstand hydraulic pressure. As an alternative the system of double open channels may with advantage be adopted, as employed in Algiers, the channels being used alternatively, each being in use for ten days at a time, and then being run dry. Sump pits should be avoided, or well covered with an hermetically sealed plate of wood or cast iron.

Special care is required in clayey soils, in soils containing clay and silica, and where the subsoil is impermeable. Adequate drainage is then essential, together with proper levelling up of depressed areas and low-lying lands.

[Nothing is said about so-called "weeping soils," *i.e.*, those containing much salt. These are specially troublesome when used to form the banks of irrigation channels raised above ground level. The salt gets dissolved out and leakage inevitably results, the pools thus formed becoming favourite breeding places for mosquitoes.]

A. B.

Sergent (Edm.) & Beguet (M.). **De l'Immunité dans le Paludisme des Oiseaux. Les Pigeons guéris de l'Infection à *Haemoproteus columbae* ne sont pas immunisés contre elle.**—*Compt. Rend. Soc. Biol.* 1914. June 12. Vol. 77. No. 20. pp. 21–23.

These authors show how the experimental study of Plasmodium and Haemoproteus of birds has had, and probably will continue to have, important relationship with similar organisms producing malaria in man. They recapitulate the history from the time when Ross's researches on bird proteosoma demonstrated the etiology of malaria, note that Koch and Ruge had shown the possibility of complete cure, and that Wasielewski showed that such complete cure was very rare, an acute attack being usually succeeded by very prolonged chronic infection, which latent chronic infection corresponded to a state of relative immunity. The present workers have already shown (1910) that it is possible to confer this relative immunity without preceding acute infection, by inoculating the birds with old sporozoites. Moldovan found that a canary quite cured of a first attack was acutely infected at re-inoculation, while five canaries which were chronics showed no adverse symptoms when re-infected.

Haemoproteus (Halteridium) used by the present workers also gave a chronic infection to birds. An Algerian greenfinch (*Passer chloris*),

guarded against re-infection, remained infected for four years. For eight years also they have worked on *H. columbae* in pigeons, which became infected either by the bite of Lynchia or by inoculation of the crushed bodies of the flies. Details of some of their experiments are given. Cure as a rule was spontaneous, but was rarely as rapid as in one case quoted, where no parasites were seen after two months.

Usually gametocytes of *H. columbae* reappeared two or three summers in succession in the blood of the pigeon. Two Algerian pigeons, kept in perfectly screened cages so that reinfection was impossible, were inoculated in 1906, were completely cured in 1910, and were re-inoculated in 1913, together with normal control pigeons bought in the Paris market. Other Paris pigeons were also kept, but were not inoculated. All the inoculated pigeons showed Haemoproteus in their blood after 31 to 38 days, two sets of successive experiments being performed. The authors conclude that an anterior attack of Haemoproteus having lasted four years, followed by a period of complete cure of four years' duration, has not conferred immunity on the two pigeons concerned.

H. B. Fantham.

Leger (André & Marcel). **Sur un Plasmodium de la Rousette du Haut-Sénégal et Niger.**—*Compt. Rend. Soc. Biol.* 1914. July 24. Vol. 77. No. 26. pp. 399–401.

In 37 out of 50 bats (*Epomorphus gambianus*) from the banks of the Niger a Plasmodium was found. Gametocytes and schizonts were seen in blood-smears.

The macrogametes possessed much irregularly disposed pigment. When fully grown these forms completely filled the somewhat hypertrophied erythrocytes, which measured 6·5μ to 7μ instead of 5μ to 6μ.

The microgametocytes are more numerous (10 to 1) than the female parasites. Their pigment is in the form of grains, or minute needles, arranged peripherally. It is yellowish brown.

In some bats schizonts were seen in small numbers. These schizonts are either (1) small, annular forms, 2·5μ in diameter, or (2) oval or somewhat amoeboid forms, 4μ to 5μ by 3μ to 4μ. The pigment is in the form of fine, blackish granules. The erythrocytes show no Schüffner nor Maurer's dots and remain normal in size. Adult schizonts, showing nuclear multiplication, were not seen. They may occur, perhaps, in the internal organs.

The authors identify the parasite with *Plasmodium pteropi*, found by Breinl in *Pteropus gouldi* in Australia (see this *Bulletin*. Vol. 2, p. 471).

H. B. F.

Mackie (F. Percival). **Note on the Parasite of Bat Malaria.**—*Indian Jl. Med. Research.* 1914. July, Vol. 2. No. 1. pp. 375-376. With 1 coloured plate.

The haemamoeboid parasite was found in the Indian fruit bat, *Pteropus edwardsii*. The infection was heavy, but most of the forms were gametocytes, though a few young rings were seen. Microgamete formation or "exflagellation" was observed on diluting infected

blood with normal saline solution. The presence of the parasite "did not seem to affect the host." The infected animal died suddenly, golden yellow pigment being found in its internal organs post-mortem. The invertebrate transmitter is unknown.

56 other bats ("flying foxes") were examined, but no haemamoeboid parasites were seen.

The name *Plasmodium pteropi*, nov. spec., is suggested.

A plate of 9 figures illustrates the parasites found.

[The name *Plasmodium pteropi* is not new. It was first given by Breinl to a parasite found by him in *Pteropus gouldi*, a "flying fox," shot near Townsville, Queensland (see this *Bulletin*, Vol. 2, p. 471). A. and M. Léger consider that a malarial parasite found in bats, *Epomorphus gambianus*, in Nigeria is of the same species, *P. pteropi*. From an inspection of the published figures of Breinl and of Mackie it seems probable that these malarial parasites of the various species of Pteropus and of Epomorphus belong to *P. pteropi*, Breinl.]

H. B. F.

Erratum.

Vol. 3. No. 3, p. 155. Summary of Dr. Manteufel's paper on Twelve Years' Experience of Anti-malarial Measures (in German East Africa). "All infected persons are dosed with quinine (15 grains every six days for adults)." Dr. A. J. Orenstein points out that there is an error in the bracketed portion of this sentence. The full translation of the text is as follows :—

All adults found infected received daily for four to six days one gram of quinine in a 10 per cent. aqueous solution. Children correspondingly less. Thereafter for two or three months two grams in solution each week on two successive days.

PROTOZOOLOGY.

Laveran (A.) & Franchini (G.). **Infections de Mammifères par des Flagellés d'Invertébrés.**—*Bull. Soc. Path. Exot.* 1914. July. Vol. 7. No. 7. pp. 605–612. With 4 text figs.

The first portion of this interesting and important memoir contains a short review of the previous researches of the authors (see this *Bulletin*, Vol. 2, p. 463 ; Vol. 3, pp. 122, 515). In addition there are figures of *Herpetomonas ctenocephali* (non-flagellate and flagellate stages) and of the flagellates of *Anopheles maculipennis*, obtained from Italy. The authors also mention *Crithidia melophagia*, Flu. The parasitic forms seen in the blood of infected vertebrate animals during these various experiments are much the same, whichever flagellate is used. Small parasites are observed in the red blood cells of the infected vertebrates (mostly mice and rats), oval or round in shape, measuring 1·2μ to 2μ by 1μ, or being 1·5μ in diameter respectively. The smallest of these elements possess only a single nucleus ; in the larger elements, which are leishmaniform, a blepharoplast is also seen. Anaplasma-like forms are considered by the authors not to be parasitic in nature. In old infections free forms are seen in the blood. These free parasites are rare and are spherical or fusiform and non-flagellate, measuring 4μ to 5μ by 1·5μ.

The infected rats and mice fairly often die, although the parasites never occur in large numbers in them. At autopsy the spleen is found to be enlarged. In smears of the liver, spleen and bone-marrow parasites are observed in variable numbers, chiefly free leishmaniforms. In some liver smears very rare uniflagellate parasites were found, oval or spherical, about 5μ in diameter, having flagella 10μ to 12μ in length. Some division forms were seen. Figures of these various parasites are given.

The second part of the memoir is devoted to new and further observations.

(*a*) Infection of mice by ingestion of faeces of rat fleas infected with *Herpetomonas pattoni*.—Young white mice were used. Details are given of four experimental animals, all of which became infected. Parasites were seen in the blood three to five days after ingestion of faeces. Three of the experimental animals showed signs of illness. All were killed and parasites were found in the liver in all cases, and sometimes in the spleen and bone-marrow.

(*b*) Two attempts at infecting dogs with *H. ctenocephali* were negative. An account of a successful experiment on a dog has already been published (see this *Bulletin*, Vol. 3, p. 122). Two monkeys, *Macacus cynomolgus*, were successfully inoculated with *H. pattoni*. One monkey was inoculated intraperitoneally with an emulsion of liver and spleen of an infected mouse. The other monkey was inoculated both subcutaneously and intraperitoneally with similar material. The infection was slight in each case. The second monkey died in about three weeks, free parasites being found in the liver and more rarely in the spleen.

(*c*) Leishmaniform parasites found in a cutaneous lesion of a mouse infected with *Crithidia fasciculata*.—A white mouse was inoculated with heart blood and liver emulsion of an infected mouse, itself

inoculated from a mouse directly infected with *C. fasciculata*. About six weeks after infection (20th February to 7th April) the mouse showed a hairless area on the nape of the neck and a pimple depressed centrally, the skin being thickened, with a little hyperaemia; there was no crust to the "button." The hairless area extended, the "button" increased in volume and there was a slight discharge. Smears of the superficial discharge showed no Protozoa. Scrapings from the floor of the sore, on the other hand, showed parasites, 1·5μ to 2·5μ by 1μ to 1·6μ, with nucleus and sometimes a blepharoplast. The blepharoplast is rarely bacilliform as in Leishmania. A fortnight after the first sore appeared another very small one developed on the left shoulder. In seven days more the neck sore appeared to be healing, and the small shoulder "button" had disappeared. The mouse, which was in good health, was killed. Two mice inoculated from the neck sore remained uninfected. Smears from the sore showed parasites. Heart blood showed very rare parasites; the liver and spleen were negative. The cutaneous lesion of the mouse closely resembled that of oriental sore.

(*d*) Attempts at culture.—Several trials of infected blood on simplified Novy medium and on Bass's medium have given incomplete results. The parasites have been found in small numbers only, too small to affirm that a culture had been successful.

The results of Laveran and Franchini's experiments "are evidently favourable to the opinions of those authors who think that Leishmania and the trypanosomes of vertebrates have arisen from the flagellates of invertebrates." No true trypanosomes were seen in any of the experimental animals.

H. B. F.

Coles (Alfred C.). **Blood Parasites found in Mammals, Birds and Fishes in England.**—*Parasitology.* 1914. May. Vol. 7. No. 1. pp. 17–61. With 4 plates.

The paper contains notes on many parasites found in the blood of animals in the neighbourhood of Bournemouth.

Trypanosomes, both mature and immature, were found in three out of twenty bats, *Vesperugo pipistrellus*. *Achromaticus vesperuginis* was also present in some of the bats. A spirochaete (*S. vesperuginis* sp. n?) was found in the bats' blood. Haemamoebae also occurred in bats.

Trypanosoma talpae was seen in five moles out of eighteen examined. Both small and long forms were seen. The long forms bear the same relation to *T. talpae* as *T. longocaudense* does to *T. lewisi*. *T. lewisi* occurred in rats, the number infected varying with the locality. Pulmonary cysts, *Pneumocystis carinii*, were found in one rat. *Trypanosoma cuniculi* in small numbers was examined in a few rabbits. Measurements are given. A cow suffering from redwater fever also contained a very large trypanosome, 98μ long. Trypanosomes were found in the blood of the blackbird, thrush and jay, and were also observed in various fish. Every eel examined contained them (*T. granulosum*) and the parasites were often exceedingly numerous. *T. percae* from perch, *T. remaki* from the pike, *T. leucisci* from the roach, all were found. Haemogregarines were also seen in the blood

of the sole, flounder, dogfish, skate and weever (*Trachinus vipera*). A probable new species of haemogregarine, *H. microti*, was detected in the blood of the field vole, while *H. muris* occurred in rats. The field mouse, *Mus sylvaticus*, also harboured *H. sylvatici* n. sp. A new piroplasm, *Nuttallia muris*, is also described from the blood of mice, and another, *N. microti*, from the water vole. *Piroplasma divergens* was obtained from a cow. Halteridia were present in many birds, especially the thrush, blackbird, starling, jay, finch. Parasites were very numerous in young birds, slight infection occurring in older ones. In blackbirds and thrushes heavy infections with Leucocytozoa occurred; flagellation was observed in fresh preparations and on stained films. Forms probably representing schizogony of the leucocytozoon occurred in the lung smears of one thrush. Grahamella and Elleipsisoma were found in moles, the former also in rats, voles and field mice. Microfilariae were detected in bats and birds, and a Bodo, or Monas was present in the heart blood of a lizard. A short account is also given of the Toxoplasma and Haemogregarine of the squirrel, both apparently being new species, *Tox. sciuri* and *H. sciuri*, respectively. The various parasites are illustrated by photomicrographs.

H. B. F.

Mine (N.). **Beiträge zur Kenntnis der Blutparasiten der Vögel in Japan.** [Blood Parasites of Birds in Japan.]—*Arch. f. Protistenkunde.* 1914. May 14. Vol. 34. No. 2. pp. 198–211. With 2 plates.

An account is given of the protozoa observed by the author in the blood of birds at Kanazawa, Japan. The hosts were sparrows (*Passer montanus*) and crows (*Corvus macrorhynchus japonensis*), and Haemoproteus, Leucocytozoa, Trypanosomes and Proteosoma were studied. While Proteosoma was uncommon in the sparrows, Leucocytozoa were often abundant. A new form of haemosporidian found in the large endothelial cells and macrophages of the spleen, lungs and bone-marrow of sparrows was discovered, its form [according to the author] being suggestive of *Leishmania donovani*.

Haemoproteus (Halteridia) were common in the blood of sparrows in summer. The author considers that he has observed male, female and indifferent forms, and that transitional forms to freely motile trypanosomes were present. Transitional forms only occurred when many young schizonts were present. Macrogametocytes propagate parthenogenetically. In the spleen gregarine-like and trypanosome-like forms were seen. The author considers that the parasite is the *Halteridium noctuae* of Schaudinn.

A new species of halteridium from the crow is described. It is considered to be new, as it is said to be binucleate, possesses alkaliphile granules, occurs near the nucleus of the erythrocyte, may be in pairs within the erythrocyte, has a large principal nucleus and presents other nuclear differences. Male, female and indifferent forms also were seen. Indifferent forms multiply rarely. The various forms are described. Apart from the very large nucleus, the features are of the ordinary type. A trypanosome, of the type *Trypanosoma avium majus*, occurred in the same crow as the new halteridium.

Proteosoma occurred in sparrows. Stages from the youngest schizonts to gametocytes were followed. The author considers that he has found male and female schizonts in the internal organs. Also he thinks binuclearity is present and that the youngest parasites have a short flagellum. The schizogony occurred in the spleen and bone-marrow and also in the peripheral blood. In the spleen and bone-marrow, free, spherical schizonts were seen. As many as 12 nuclear divisions may occur. Male and female merozoites result. There are also small merozoites, which may not have originated from the above described schizogony. Male and female forms differ in staining reactions. They are 2μ to 3μ long and $0{\cdot}3\mu$ to $0{\cdot}5\mu$ broad.

A new kind of Haemosporidian was found in preparations of the spleen of the sparrow. The parasites showed "kala-azar-like stages." In summer they often occurred in the protoplasm of leucocytes. Often two to ten parasites were in one cell, occasionally masses of 100 to 200 were present in a single host cell. At the height of infection, many tiny wedge-shaped forms were seen. The protoplasm of intracellular forms "cannot be distinguished." Both they and young free forms seem to be composed of nuclear material. [This interesting parasite deserves further investigation. Is it not a Toxoplasma ?]

H. B. F.

Leger (Marcel & André). **Trypanosomes et Haemoproteus d'Oiseaux du Haut-Sénégal et Niger.**—*Bull. Soc. Path. Exot.* 1914. June. Vol. 7. No. 6. pp. 493–497.

The paper contains an account of a number of trypanosomes found by the authors in birds from the neighbourhood of Bamako. A table of certain characteristics of various Haemoproteus of birds also is given.

The trypanosome of *Ardea atricapilla* seems identical with *T. calmetti*, described by Mathis and Léger from the domestic fowl. The trypanosome of *Francolinus bicalcaratus* is quite distinct from that described by Kerandel in the same bird in the Congo. The length is only 38μ without flagellum, instead of about 60μ. The blepharoplast is very small. *Glaucidium perlatum* has a massive trypanosome with finely vacuolated cytoplasm; the nucleus is perpendicular to the long axis of the body. The membrane has three or four large undulations. A trypanosome in *Lanius auriculatus* has its protoplasm striated longitudinally [myonemes], especially the part in front of the nucleus. A vacuole anterior to the blepharoplast seems constant. *Nectarina platyura* contains a trypanosome with a voluminous nucleus; that of *Vidua principalis* also has well marked longitudinal striations. The trypanosome of *Hyphantornis cucullatus* has no free flagellum. *Trypanosoma lagonostictae* has also been seen in a *Lagonosticta minima*, having been found previously by Marullaz in *L. senegala*. The last trypanosome described is from *Cynniris chloropygia*, 27μ long by 6μ broad, and no free flagellum has been seen. A table of dimensions of the various trypanosomes is also given.

H. B. F.

Woodcock (H. M.). **Studies on Avian Haemoprotozoa: No. III.—Observations on the Development of *Trypanosoma noctuae* (of the Little Owl) in *Culex pipiens*; with Remarks on the Other Parasites occurring.**—*Quarterly Jl. Microsc. Sci.* 1914. Sept. Vol. 60. Pt. 3. pp. 399-433. With 3 plates and 1 text fig.

The author concludes the account of his researches on the parasites of the little owl (*Athene noctua*) carried out at Rovigno in 1909. The organisms described are *Trypanosoma noctuae*, the oökinetes of *Halteridium noctuae* and *Leucocytozoon ziemanni*, and certain "resting flagellates." The stages in the invertebrate host, *Culex pipiens*, are especially dealt with.

Regarding *T. noctuae* the author describes and figures crithidial forms, early trypaniform parasites and types approximating to the final inoculative stages as seen in the mosquito. He considers the inoculative forms to be attenuated, thread-like trypanosomes with ladder-like nucleus, and they are depicted in five figures. They occur in the stomach and are probably inoculated again into the blood of a vertebrate at the second time of the mosquito's feeding. Stumpy, gregariniform, but still flagellate parasites, serving for attachment and coincident multiplication, are also figured; they occur in the anterior end of the stomach and in the invaginated epithelium of the proventriculus.

The author concludes that "the three parasites of the little owl—*Trypanosoma noctuae*, *Halteridium noctuae* and *Leucocytozoon ziemanni*—are entirely distinct and separate types."

The development of the Halteridium and the Leucocytozoon beyond the oökinete stages, which are figured, remains to be ascertained.

The "resting flagellates" were found in "wild" mosquitoes. There are five figures of them.

The last plate contains a "scheme comparing the development of *T. noctuae* in the mosquito with the developmental stages of *T. fringillarum* [of the chaffinch] as found in cultures." H. B. F.

Leger (Marcel & André). **Hématozoaires des Reptiles du Haut-Sénégal-Niger.**—*Bull. Soc. Path. Exot.* 1914. June. Vol. 7. No. 6. pp. 488-493. With 6 text figs.

During the French scientific mission to Senegal, Haut-Sénégal-Niger, the military territories of Chad, Dahomey, Ivory Coast and Guinea, Bouet collected haematozoa of reptiles, and blood-smears of various saurians, chelonians and ophidians have been sent to the authors. The haemogregarines of Varanus and of a crocodile are now described.

Two types of haemogregarines were found in *Varanus niloticus*. In two of the three Varanus the parasite was a curved vermicule, 12μ to 14μ long by 2·5μ broad, with a nucleus extending two-thirds of the length of the body and about half its breadth. No cyst wall was seen. Young forms were 2μ to 3μ. The second type was always larger, 10μ to 12μ by 4·5μ to 5μ. The nucleus was fairly compact, with bands of chromatin extending across it. In each case, the volume of the host-cell was normal and there was no tendency to karyolysis. The two types never occurred in the same animal. The second haemogregarine is identified with *H. varani* Laveran.

Crocodilus niloticus has both free and endoglobular haemogregarines The endoglobular forms are in various positions in the non-hypertrophied but deformed host cells. The mature form, surrounded by a cyst wall, measures 12μ to 14μ. Chromidia occur near the nucleus. Free forms are 18μ to 21μ long with a maximum breadth of 2·5μ.

In a lizard, common on the Niger banks, having an orange under surface, the authors found a trypanosome in the blood which they regard as a variety of *T. boueti*. A spitting serpent, *Sepedon haemachates*, contained *Plasmodium mesnili* Bouet. Macro- and microgametocytes, 18μ to 20μ by 9μ to 12μ were found within hypertrophied erythrocytes, the deep staining macrogametocytes, with their voluminous pigment, being distinguished easily from the microgametocytes.

H. B. F.

Leger (Marcel & André). **Hémogrégarine et Trypanosome d'un Poisson du Niger,** *Tilapia lata.—Compt. Rend. Soc. Biol.* 1914. June 26. Vol. 77. No. 22. pp. 183-185.

The authors have examined some thirty *Tilapia lata*, a fish found in the Niger, at Bamako. They found haemogregarines and a trypanosome in the blood. The haemogregarine was always endoglobular. Small forms were vermicular, 2μ to 3μ by 1μ to 1·5μ. The host cells were not hypertrophied, nor their nuclei displaced. Large vermicular forms 9μ to 10μ long and 2μ to 2·5μ broad were often curved. The red cell containing the parasites seemed to become rounded without hypertrophy. Large ovoid parasites, 8μ to 9μ by 5μ also were present. The host cell was not dehaemoglobinised, it was deformed and its nucleus while intact was displaced to one side. No multiplicative forms have been found in the blood. The large vermicules and large ovoid forms are, in the opinion of the authors, sexual elements, and the proportion of the sexes is ten male to one female. The parasite is named *Haemogregarina tilapiae*.

The trypanosome of *Tilapia lata* is not described but a table of its dimensions is given. Its total length is 50μ, the free flagellum being 10μ, and the maximum breadth is 4μ.

H. B. F.

Visentini (Arrigo). **Ricerche sopra taluni Microparassiti della Talpa e sulla Alterazioni Istopatologiche da essi Prodotte. (Seconda Nota preventiva.)** [Some Microparasites of the Mole.]—*Boll. Soc. Med. Chirurgica di Pavia.* 1914. No. 1. 12 pp. With 1 plate.

The author refers briefly to his former paper (see this *Bulletin*, Vol. 3, p. 121) and then gives an account of a Sporozoon he has found in the mole, *Talpa europoea*, which he considers to be a new Coccidium. He mentions that he thinks that the Haemogregarines should be considered as true Coccidia.

The new parasites were found in the spleen and especially in the liver of the host. Rounded cysts, measuring 22μ to 33μ in maximum diameter, occurred in the epithelium of the hepatic canaliculi and bile ducts. The invaded cells at first showed hypertrophy and nuclear degeneration and then atrophy. Necrotic foci in the liver were visible macroscopically. The connective tissue also showed inflammatory changes.

Two forms of the parasite, macrogametocytes and microgametocytes, were observed. Details of their morphology are described. Figures of these forms, together with one representing possible fertilisation are given. Cysts containing macrogametes and microgametes were seen, as well as structures that might represent oocysts.

On searching the literature, the only organism corresponding to the one Visentini has described was the parasite of the mouse described by Carazzi, which he interpreted as oocysts of *Eimeria stiedae*, a common parasite of the rabbit. The author concludes by suggesting that, if his mole parasite is really a stage in the development of a Coccidium, another stage of the vital cycle may occur in the circulating blood.

H. B. F.

Leger (Marcel & André). i. **Les Leucocytozoon : leur Dénombrement et Essai de Classification.**—*Bull. Soc. Path. Exot.* 1914. May. Vol. 7. No. 5. pp. 437–447.

Laveran (A.). ii. **Sur les Leucoytozoon.**—*Ibid.* June. No. 6. pp. 461–462.

Leger (M.). iii. **Sur les Leucocytozoon.**—*Ibid.* July. No. 7. pp. 549–550.

i. The authors give a useful list of the known Leucocytozoa of birds. There are over 120 entries of Leucocytozoa found in various avian hosts, the latter being arranged according to Gadow and Evans's classification. The parasites are divided according as the host cell is either (1) fusiform, with the ends drawn out, or (2) rounded. Each division is further subdivided according as the nucleus of the host cell is either slightly or greatly deformed by the action of the parasite. The authors consider that the fusiform host cells are erythroblasts, altered and hypertrophied [but they do not clearly establish their view.] They consider that the rounded host-cells are mononuclear leucocytes. They point out the insufficiency of a classification based on the specificity of the avian host, for the same species of bird may be parasitised by two kinds of Leucocytozoa, one in rounded cells and another in fusiform host cells. Finally, the authors point out that their classification is provisional. They state that it will give place to a more rational one when the "secret of schizogony has been penetrated" and when the life-cycles in the probable invertebrate hosts are known. [But schizogony is already known to occur in the internal organs of the vertebrate hosts in at least two cases, namely, that of *L. lovati* in the spleen of the grouse as found by Fantham (1910) and of *L. ziemanni* in owls by Moldovan (1913), see this *Bulletin*, Vol. 2, pp. 265, 466.]

ii. Laveran points out that as regards the Leucocytozoon, *L. ziemanni*, of *Athene noctua*, the species name was not given by Lühe in 1906, as stated by A. and M. Léger, but by himself in 1902, when Laveran named the organism *Haemamoeba ziemanni*. Laveran also maintains that certain of these organisms (*e.g.*, *Haemamoeba majoris*) contain black pigment granules. Finally, Laveran points out again that endocellular haematozoa should be classified according to their morphological and evolutionary characters, and not according to the modifications which they produce in the host cells.

iii. M. Léger apologises for the error in ascribing the name L. *ziemanni* to Lühe instead of Laveran. No doubt is cast on the pigmented character of the Leucocytozoon of *Parus major*. It is acknowledged that the proposed classification of A. and M. Léger is based upon physiological and not morphological characters. It is provisional only, and may be useful, as it recognises characters easy of control.

H. B. F.

Leger (André & Marcel). **Leucocytozoon d'Oiseaux du Haut-Sénégal et Niger.**—*Bull. Soc. Path. Exot.* 1914. May. Vol. 7. No. 5. pp. 391–395.

Leucocytozoa were found in the following birds of Haut-Sénégal et Niger :—*Ardea atricapilla* in rounded mononuclear leucocytes ; in *Turtur senegalensis* in rounded cells ; in *Centropus monachus* in rounded cells ; in *Corvinella corvina* in rounded mononuclear leucocytes ; in *Hyphantornis cucullatus ;* in *Pyromelaena flammiceps* in rounded cells ; in *Prionops plumatus ;* in *Pycnonotus barbatus* in rounded cells ; in *Numida meleagris ;* in *Francolinus bicalcaratus*, in both fusiform and rounded cells ; in *Bubo lacteus* in markedly fusiform cells ; and in *Coracias abyssinicus* in deformed fusiform cells, seemingly rounded.

H. B. F.

Moldovan (J.). **Untersuchungen über den Zeugungskreis des *Leucocytozoon ziemanni* (Laveran).**—*Arch. f. Protistenkunde.* 1914. June 17. Vol. 34. No. 3. pp. 249–262. With 2 coloured plates.

The author gives an account of his researches on the Leucocytozoon and trypanosome of the stone-owl, and apparently considers that his work shows a genetic relation between the organisms, as was stated by Schaudinn in 1904. In acute infections active schizogony of *L. ziemanni* occurred, there being a six days' periodicity. The acute stage was only found in July and August, and the schizonts diminished in numbers about the middle of August. With chronic infections the schizonts occurred sparsely in the peripheral blood. Gametocytes in their youngest stages are not different from schizonts, but gradually assume the characteristic forms. Division stages of gametes and double infections of the host cells with gametocytes were not seen. Male and female leucocytozoa were observed from April to October.

By cultures on Novy and MacNeal's medium the author states that characteristic oökinetes arise from the fertilised macrogametes, which can further develop as flagellates. Two plates of coloured figures [but open to various interpretations] illustrate the paper.

H. B. F.

Phisalix (Marie). **Sur une Hémogrégarine Nouvelle, Parasite de *Boodon fuliginosus* Boïe, et ses Formes de Multiplication Endogène.**—*Bull. Soc. Path. Exot.* 1914. July. Vol. 7. No. 7. pp. 575–577.

In an African adder, *Boodon fuliginosus*, sent from the Sudan, which died one month after it was received [in Paris ?] the author

found a new haemogregarine. The ectoparasites on the snake were *Ophionyssus natricis* (a Gamasid mite) and *Aponema laeve* (an Ixodid tick). Nematodes were found in the oesophagus and perivisceral connective tissue. There was marked anaemia and some loss of haemoglobin in the remaining erythrocytes of the reptile.

Endocorpuscular parasites were of two kinds :—(a) vermicular, 14 μ to 15μ by 2μ to 3μ and (b) broader forms, fewer in number, reaching 7μ in breadth. Free parasites presented similar appearances.

In the lungs, liver, spleen and kidneys ellipsoidal cysts, measuring 17·5μ to 30μ by 12·5μ to 20μ were found. They contained macromerozoites, two to four, or rarely six, in number. Other cysts, 25μ to 30μ by 18μ to 25μ, were seen in the lungs, liver and pancreas, in which micromerozoites were in process of formation.

The parasite is named *Haemogregarina boodoni.*

H. B. F.

Ducceschi (V.). **Note di Parassitologia comparata del Sangue.**—*Annali d'Igiene Sperimentale.* 1914. Vol. 24 (Nuova Serie). No. 2. pp. 269–273. With 1 coloured plate.

In this paper two haemogregarines are described and figured. The first is *Lankesterella leptodactyli*, a small parasite occurring in the blood of the South American frog, *Leptodactylus ocellatus.* Endocorpuscular and free forms were seen. The invertebrate transmitter is perhaps a larval Hydrachnid.

The second parasite is *Haemogregarina iguanae* found in the blood of two iguanas (*Tupinambis teguexin*). The parasite does not multiply in the blood, and search for multiplicative stages in the internal organs of the host has so far been negative.

H. B. F.

Crawley (Howard). i. **Two new Sarcosporidia.**—*Proc. Acad. Nat. Sciences Philadelphia.* 1914. Mar. pp. 214–218. With 1 text fig.

ii. **The Evolution of** *Sarcocystis muris* **in the Intestinal Cells of the Mouse** (Preliminary Note).—*Ibid.* May. pp. 432–436. With 1 plate.

i. The first of the new Sarcosporidia, *Sarcocystis leporum*, n. sp. was found in the " arm and shoulder of a very old male rabbit shot at Bowie, Md. [Maryland], on December 13th, 1913." " In the fresh tissue the parasitic cysts were visible as short, delicate threads or rods lying in the muscles. They were about 2 millimeters long, and the diameter measured in paraffin sections was from 200 to 250 microns." The infection, however, was very slight. Within the sarcocysts were the usual compartments or chambers containing spores, a small central area being empty. The banana-shaped spores, as seen in smears, averaged 13μ by 5μ. One end, the anterior, was the more pointed and contained homogeneous faintly staining cytoplasm. The nucleus was usually near the posterior end. The median portion of the spore was deeply staining and alveolar. The author considers the anterior

clear portion of the spore analogous with a rostrum. According to his hypothesis, this anterior area may be used later to bore a way into the intestinal epithelium of a new host. There is a text figure representing three spores.

The second parasite is called *Sarcocystis setophagae*, n. sp. having been found in 1895 in the muscles of a redstart (*Setophaga ruticilla*). The sarcocysts averaged 2·5 mm. by 1 mm. The spores were small, 4μ to 5μ by 0·75μ to 1μ. They resembled the spores of *S. rileyi* of the duck.

ii. The author disagrees with ERDMANN'S researches (1910) as "the [Sarcosporidian] spore when in the lumen of the intestine of the mouse does not set free an amoebula, since it is itself a naked mass of protoplasm." Crawley states that "the spore, when in the intestine of the mouse, becomes endowed with the ability to display very energetic twisting and boring movements, by virtue of which it forces its way into a cylinder cell of the intestinal epithelium, and there comes to rest. This takes place within 2½ hours after the infecting feed, and possibly much earlier."

Some of the spores of *Sarcocystis muris* when swallowed by a mouse become "oval bodies, generally about half as long as the typical spore." Their nucleus is vesicular and the cytoplasm "consists of a dense spongioplasm." Such spores are figured as occurring in the cylinder cells of the host 2 to 2½ hours after feeding. Similar spores occur also in the lumen of the gut at the same time. The intracellular parasites then undergo gradual diminution of the cytoplasm but show increase in size and complexity of the nucleus—characteristic of the period about six hours after feeding. A little later, nine hours after feeding, the parasite "is characterized by a great variety of conditions, of which the majority are difficult to interpret." Crawley considers that the parasites are separating into two categories, reaching their full culmination at the end of 18 hours. He interprets this differentiation as that of male and female forms.

Male elements "apparently consist of only the nucleus of the original spore." They "show a karyosome and a nuclear net which here and there supports little aggregates of chromatin." Finally these become multinucleate and form "microgametes." The microgametes are 2 to 2·5μ long, with one end broader than the other. These reach their full development at the end of 18 hours and are no longer present at the end of 24 hours. Some of the male elements lose their cytoplasm as early as three hours after the host's infected feed.

The females "can only be picked out with any certainty" in their later developmental phases. According to the author's hypothesis and interpretations the females appear to "retain most if not all of their cytoplasm." Also, "in the periods from 9 to 18 hours parasites which are clearly females show phenomena which suggest maturation." In the early stages, about 9 hours after feeding the host, the females are "oval elements containing a vesicle in which is a chromatin body." Finally, the author figures a condition which suggests fertilization of a macrogamete by a microgamete.

The plate contains 12 figures showing all the main points of the author's views.

H. B. F.

Erdmann (Rh.). **The Schizogony in the Life Cycle of** *Sarcocystis muris*. —*Proc. Soc. Exper. Biol. & Med.* 1914. May 20. Vol. 11. No. 5. pp. 152–153.

The author had described in 1910 certain large amoeboid forms of *Sarcocystis muris* found in the walls of the intestine and in the lymph vessels of experimentally infected mice. Further investigations, briefly summarised in this note, record "the appearance of small ameboid and schizogony forms six days after infection. These stages were discovered after feeding sarcosporidia to young mice nourished with milk from birth to the end of the experiments. These small schizogony forms (0·3μ to 0·4μ) consist of a tiny protoplasmic body with a caryosome-nucleus, and arise from smaller ameboid organisms which show typical schizogony."

The author continues: "Although these mice did not contain any other protozoan parasites in the intestine, I hesitate to connect positively the small ameboid and schizogony forms with the newly introduced Sarcosporidian "spore" until further study actually demonstrates the transition."

A complete account of the investigations is promised.

H. B. F.

KALA AZAR.

Basile (Carlo). i. **La Meteorologia della Leishmaniosi Interna nel Mediterraneo. Nota 1.**—*Atti. d. R. Accad. d. Lincei. Rendiconti.* 1914. Apr. 5. ser. 5. Vol. 23. (1 semester.) No. 7. pp. 539–542.

ii. **La Meteorologia della Leishmaniosi Interna nel Mediterraneo. Nota 2. Contributo Critico agli Esperimenti di Trasmissione.**—*Ibid.* Apr. 19. No. 8. pp. 625–629.

i. In this paper the author emphasises his belief that the possibility of transmission of leishmania from dog to man by means of fleas (*Ctenocephalus canis*) and the development of the leishmania in the fleas depend very intimately on the meteorological conditions of temperature and humidity. He has already shown that the optimum temperature for development of leishmania in the flea is 22° C., and that in nature fleas become infective most usually in the winter (December to March), and at other seasons when the conditions are the same. Many authors have shown that the cases of infantile kala-azar occur most frequently during the cooler months, and this, again, accords with the flea transmission view set forth by the author.

Tables are given showing the temperature conditions prevailing in Hydra, Palermo, and Messina, during the various months of the years 1909 to 1913. In Hydra during the months November to April the maximum temperature varied ftom 18° to 22° C., and it was during these months that the majority of cases of infantile kala azar were recognised. Cases also occur, but in smaller number, up to a maximum temperature of 30° C. The few cases which appear during the warmer seasons may be due to failure of recognition or longer incubation. Similar conditions prevail in the case of Palermo and Messina.

These facts, in the author's opinion, bear out his view that the flea is the transmitter of kala azar, but that it can only do so when the requisite conditions of temperature exist. He believes also that the atmospheric humidity must have some influence, but that there is great difficulty in estimating its effect.

ii. In the second note the author criticises the experiments which have led certain observers to doubt the validity of the flea transmission hypothesis. He points out that his own experiments were conducted during the winter months, when the meteorological conditions answered the requirements set forth above, while the development of the leishmania in the fleas was followed after they had been kept at an optimum temperature of 22° C. Sergent in Algeria obtained a positive transmission from dog to dog by fleas which had been kept at 22° C. after having fed on the infected dog, while the experiment was commenced in February, when the right conditions prevailed (this *Bulletin*, Vol. 1, p. 368). The negative results of the experiments of Massaglia, Marshall, and Wenyon were due to these observers not having discovered if the fleas were harbouring flagellates of the leishmania type and, further, to the experiments being conducted under other than the necessary meteorological conditions.

A similar criticism is made of the experiments of Pereira da Silva who, on April 27th, placed a pup one month old to live with his experimentally infected dogs. At various times fleas whose faeces

were known to contain flagellates of the leishmania type were transferred from the infected to the healthy dog. The dog died in December without any sign of infection. Basile claims that the meteorological conditions were favourable for the development of the leishmania in the fleas, but that the necessary conditions no longer existed (June to December) when the fleas could have transmitted the infection to the healthy dog.

[In connection with Basile's experiments and the criticism he makes of the negative ones conducted by others, it is well to remember that Basile himself produced no evidence that the flagellates observed by him in the fleas were other than natural flagellates of these insects. The negative results of other observers are in large part due to their having taken the trouble to exclude such natural flea infections. Moreover, the percentage of leishmania infected fleas discovered by Basile corresponds very closely with the percentage of naturally infected fleas in kala azar free countries, so that the inference is that the flea flagellates supposed to have developed from the leishmania by Basile are really nothing more than the natural parasite of the fleas.

As regards the positive transmission experiments from dog to dog by fleas, as described by Basile, we must remember that these were carried out in Bordonaro or Rome, in both of which places Basile described a high percentage of naturally infected dogs, so that there exists the possibility that his experimental animals were already infected when the experiment began.]

C. M. Wenyon.

Patton (W. S.). **The Behaviour of the Parasite of Indian Kala Azar in the Dog Flea,** *Ctenocephalus felis*, **Bouché, with some Remarks on Canine Kala Azar and its Relation to the Human Disease.**—*Indian Jl. Med. Research.* 1914. July. Vol. 2. No. 1. pp. 399–403.

This important paper records observations the author has made upon the behaviour of *Leishmania donovani* in the Indian dog flea, *Ctenocephalus felis*. The experiments were made upon a dog which had been infected from a case of kala azar. Four days before the dog died there were as many as 500 parasites in each film of the peripheral blood, so that the several hundred bred fleas which fed upon the dog at this time had certainly taken up many parasites. Two days before the dog died 1,000 parasites were present in each film of the peripheral blood. The experiments were conducted during the cold weather, and the alimentary tracts of more than 200 fleas were examined.

The parasites, two hours after ingestion by the fleas, were still within the leucocytes in the mid-gut, and many infected leucocytes were being found in the faeces. Many of the parasites in the cells appeared to be degenerating.

Four hours after ingestion the leucocytes were degenerating and the parasites being liberated ; none of these showed any signs of development but were, on the contrary, indistinct and breaking up into granules.

Six hours after ingestion there was a marked diminution in the number of parasites, and those which were still present were almost completely degenerated. A few faintly staining forms were found in the hind-gut and rectum.

After eight hours it was exceedingly difficult to recognise a single parasite, while all fleas dissected at later intervals did not contain any parasites.

These facts are in marked contrast to those of Basile and others who claim that the dog flea is the transmitter of Mediterranean kala-azar, and that the leishmania undergo development in them.

The author refers to the recent experiments of Laveran and Franchini, who have shown that the *Herpetomonas ctenocephali* is pathogenic to the mouse, and that the duration of the disease varies from 24 to 123 days. A white rat inoculated from the heart blood of an infected mouse also became infected, while a dog inoculated intraperitoneally with emulsion of the liver and spleen of a mouse infected with *H. ctenocephali* died in 53 days, the typical round parasites being found in the organs. The authors referred to have also infected white mice by feeding them on fleas (*Ceratophyllus fasciatus*) infected with *H. pattoni*. They have also infected mice by inoculating them with *Crithidia fasciculata* of *Anopheles maculipennis*, and by feeding them on *Melophagus ovinus* infected with *Crithidia melophagia* (see above, page 381). These experiments, Patton remarks, show that the dog is easily infected with *Herpetomonas ctenocephali*, and that the disease of dogs in the Mediterranean districts known as canine kala azar may be nothing more than infection with *Herpetomonas ctenocephali*, and have nothing to do with the human disease of the same name, the association of the two being only a coincidence. [It must not be forgotten, however, that in all the endemic centres of Mediterranean human kala azar, there dogs suffer from canine kala azar. It seems difficult to imagine that this is only a coincidence of two distinct diseases.]

The conclusions are :—

"1. The parasite of Indian kala azar does not develop in the dog flea *Ctenocephalus felis*, but degenerates and disappears in eight hours. This, together with the fact that the dog has not been found infected with kala azar, or perhaps to be exact, herpetomoniasis, in India, strongly supports the view that human kala azar is not of canine origin. The human flea, *Pulex irritans*, has not been found in Madras.

"2. Assuming that the parasites of Indian and Mediterranean kala-azar are identical, it is difficult to understand why the one does not develop in the flea, while the other does.

"3. The fact that the dog may be infected with *Herpetomonas ctenocephali* suggests that the so-called canine kala azar may have nothing to do with the human disease, and that its association with it is a coincidence. There is at present no proof that either *Ctenocephalus canis* or *Pulex irritans* transmits the parasite of human kala azar from dog to man and man to dog, and the hypothesis advanced by Nicolle and so vigorously supported by Basile and others appears to be based on very slender evidence."

C. M. W.

Nicolle (Charles). **Chronique du Kala-azar en Tunisie.**—*Bull. Soc. Path. Exot.* 1914. June. Vol. 7. No. 6. pp. 479–481.

Kala azar in Tunis is a rare disease, for only eight cases have been observed in children since 1912, making a total of 38 cases for this district. During 1913, with the help of M. Jannot, the author examined 109 stray dogs, and found six cases of infection. In the first quarter of the year there were two cases of infection out of 33 examinations, in the second quarter two out of 35, in the third quarter

two out of 36, and in the fourth none out of the small number of five examinations.

Referring to cultures of leishmania, the author remarks that five strains have been kept by subculture every two months. Two of these are *Leishmania donovani* from human cases and have reached the 100th and 56th subculture respectively ; two of leishmania of canine kala azar have reached the 61st and 58th passage ; while one of *Leishmania tropica* of oriental sore has reached the 109th subculture, and has been kept up since November, 1909. All these forms grow readily as little transparent colonies on the surface of the agar, and the flagellates have undergone no change in morphology during this time.

The author again draws attention to a form of splenic anaemia with splenomegaly occurring in young children a few months old, which has approximately the same mortality as kala azar. Up to the present no autopsy has been obtained, so that a careful study of the disease has not been possible.

C. M. W.

Spagnolio (Giuseppe) & Giugni (Francesco). **Stato presente del Problema della Transmissione della Leishmaniosi Interna nei Paesi del Bacino Mediterraneo. (Rivista sintetico-critica, 1ª Parte.)**—*Malaria e Malat. d. Paesi Caldi.* 1914. May-June. Vol. 5. No. 3. pp. 204–211.

As the title indicates, this is a review of the present position of Mediterranean kala azar, with special reference to work that has been done on the flea transmission hypothesis. It contains no new observations, and is based on work done by authors whose papers have already been reviewed in this *Bulletin*.

C. M. W.

Rho (F.). **Le Varie Forme di Leishmaniosi e le Loro Specie o Varietà Parassitarie.**—*Ann. di Med. Nav. e Colon.* 1914. Apr.-May. Ann. 20. Vol. 1. No. 4–5. pp. 429-436.

This paper contains a general discussion on Indian and Mediterranean kala azar, human and canine kala azar, and the relation of kala azar to cutaneous leishmaniasis, without contributing any new observations.

C. M. W.

[Divaris (S.).] ΔΙΒΑΡΗ (Σ.). Ἡ νόσος Καλα-αζὰρ ἐν Κεφαλληνίᾳ. [Kala Azar in Cephalonia.]—Ἰατρικὴ Προόδος. 1914. Apr. 1 & 15. Vol. 19. Nos. 7 & 8. pp. 132–133.

An account of a fatal case of kala azar, in a child two years of age, observed by the author during a stay in Cephalonia (Ionian Isles). Five other cases were also noted. The disease would seem to have been recognised in Cephalonia for a long time past, and goes by the local name of Haplopinacon.

J. B. N.

Vaglio (R.). **Contributo alla Ricerca del Parasita di Leishman nel Sangue Periferico di Bambini affetti da Leishmaniosi.** [The Finding of Parasites in the Peripheral Blood of Infected Children.]—*Pediatria.* 1914. Sept. Vol. 22. No. 9. pp. 682–686.

Cannata just demonstrated that parasites could be found in the ordinary blood films made from the peripheral blood of cases of infantile kala azar. He had fifteen successes in sixteen consecutive cases of the disease. The writer of the paper under review has confirmed these observations by finding parasites in the peripheral blood of eleven cases, and this without any long or laborious search. The parasites were mostly in mononuclear cells, sometimes in polynuclears, and in two cases free in the plasma.

C. M. W.

Giugni (Francesco). **La Emocultura della *Leishmania donovani* dal Sangue periferico in un Caso di Kala-azar nel Bacino del Mediterraneo.**—*Pathologica.* 1914. June. Vol. 6. No. 134. pp. 284–285.

The author records the successful culture of leishmania from the finger blood of a case of infantile Mediterranean kala azar. In all, sixteen tubes of NNN medium were inoculated, and of the twelve remaining uncontaminated, two showed growth of flagellates on the 12th and 14th days respectively.

C. M. W.

Giugni (Francesco). **Richerche sulla Vitalità e lo Sviluppo della *Leishmania donovani* nei Terreni Culturali.** [Vitality and Development of *L. donovani* in Cultural Media.]—*Malaria e Malat. d. Paesi Caldi.* 1914. May-June. Vol. 5. No. 3. pp. 156–161.

The two successful results obtained by Mayer and Werner, and by Wenyon, who cultivated leishmania from the peripheral blood of cases of Indian kala azar in NNN medium, led the author to try the experiment on Mediterranean infantile kala azar. After many failures it was thought that the condition of the medium might be the cause of the lack of development. Accordingly, the author made three series of media, using human, rabbit, and dog blood. In each series the quantities of agar (14 grams) and water (1 litre) were the same, but the amount of sodium chloride added varied from nothing up to 19·8 grams per litre. No development was obtained in the human blood medium, but good development in the rabbit- and dog-blood media, but only in those tubes which had sodium chloride in quantity varying from 5·25 to 9·24 grams per litre. In media containing this quantity of salt the red corpuscles remained intact, so it was thought that this was possibly a necessary condition. Another series of media of the same kind was made, but to which was added the same quantity of rabbit's blood previously laked. Though the leishmania would develop in this, they became inactive in 15 to 20 days, while in the medium with intact corpuscles they remained active for a much longer time. Accordingly the author concludes that intact red cells in the fluid is essential for the prolonged vitality of the flagellates. Attempts were made to grow the flagellates in Row's medium, which consists of a laked blood to which a quantity of salt has been added. This

medium, which does not contain intact red cells, has not proved, in the author's hands, so successful as the usual NNN medium.

As regards the failure of the leishmania to grow in the human blood medium, the author points out that this has a direct bearing on the cultivation of leishmania from the peripheral blood of cases of kala azar, and concludes that it is the addition of this human blood to the medium which generally prevents the growth of the leishmania. In Mayer and Werner's and Wenyon's cases, where successful culture was obtained, the blood happened to be in a condition which did not inhibit growth. C. M. W.

Cannata (S.) & Caronia (G.). **Cultura dei Parassiti di Leishman dal Sangue Periferico nella Leishmaniosi Infantile.**—*Pathologica.* 1914. Aug. 15. Vol. 6. No. 138. pp. 396–398.

After many failures, the authors have succeeded in cultivating leishmania from the blood drawn from the median basilic vein of a case of Mediterranean infantile kala azar. About 2 cc. of blood was drawn from the vein and distributed in twelve tubes of medium—six of NNN medium, and six in a modification of the Bordet and Gengou medium prepared as follows :—100 grams of broken-up potato are brought into 200 grams of a 5 per cent. watery solution of glycerine, and the whole raised to 120° C. for 15 minutes. The liquid is decanted and to every 50 cc. there is added 150 cc. of 9 per cent. sodium chloride solution and 5 grams of agar. This agar is employed as in NNN medium with defibrinated rabbit's blood in the proportion of 1 of blood to 2 of agar.

At the same time, two tubes of each medium were inoculated with spleen puncture fluid. In the two NNN tubes there was abundant growth in ten days, whereas in the two tubes of the new medium this took only seven days. Of the twelve tubes inoculated from the blood, growth was noted in two of the new medium on the tenth day. This had become an abundant growth by the twenty-fifth day. All the other tubes remained sterile.

Remarking on the results of Giugni, the authors do not think the view set forth by him is correct, viz., that the human blood added to the NNN medium in inoculating the tubes prevents the growth of leishmania, for their own success, and the previous ones of Mayer and Werner and Wenyon, serve to show that the human blood added did not prevent multiplication. C. M. W.

Luna (Francesco). **Particolarità Culturali del Parassita di Leishman nel Terreno di NNN.**—*Pathologica.* 1914. Sept. 1. Vol. 6. No. 140. pp. 443–445.

As other observers, the author has noted that the parasite of kala azar will grow and multiply on the surface of the agar in tubes of NNN medium. The parasite grows quite well under anaerobic conditions, but though multiplication takes place in an atmosphere of hydrogen, death soon results. Similarly, in oxygen there is slight development, but the cultures soon die. On the surface of the medium the flagellates are of a rounded type, but showed no variations according to the atmospheres in which they grew. C. M. W.

Patanè (C.). **Sulla Trasmissibilità della *Leishmania infantum* ai Topi Albini.**—*Boll. Accad. Gioenia Scienze Naturali in Catania.* 1914. May. Ser. 2. No. 31. pp. 62–66.

The author has infected fourteen white mice with culture of *Leishmania infantum.* Half a cubic centimetre of culture was injected intraperitoneally, and 24 hours later a further half cubic centimetre intravenously in the caudal vein. Four of the mice under 10 grams weight died within a few days, and in two of these leishmania were recovered by culture from the spleen or marrow. In one they were seen in small numbers in smears of the spleen and marrow. The other mice were larger and survived a longer period. In only one of these was infection demonstrated by culture from the spleen.

C. M. W.

Iuspa (V.). **Azioni di alcuni Derivati della Chinina sulla *Leishmania infantum* in vitro.**—*Boll. Accad. Gioenia Scienze Naturali in Catania.* 1914. May. Ser. 2. No. 31. pp. 60–62.

The author has investigated the action of 20 compounds containing quinine on the flagellate forms of *Leishmania infantum.* A table is given giving the dilution required to render the flagellates immobile in 30 minutes. The most potent is isoamyl hydro-cuprein, which is active in a dilution of 1 in 7500.

C. M. W.

Canine Leishmaniasis.

Pringault (E.). **La Leishmaniose Canine à Marseille.**—*Bull. Soc. Path. Exot.* 1914. June. Vol. 7. No. 6. pp. 484–488.

The author has continued his observations upon the stray dogs of Marseilles. He has now examined 310 such dogs, and has found amongst these five cases of leishmania infection. The percentage (1·61) of dogs in Marseilles naturally infected with kala azar is about the same as that observed in the endemic centres of Tunis and Algeria.

Enquiry has shown that there is very little possibility that any of the infected dogs had entered Marseilles from elsewhere, so that it may be accepted that canine kala azar is endemic in Marseilles, as in other places in the Mediterranean area.

In a discussion following upon Pringault's announcement Laveran points out that there is no need for alarm that kala azar will be found to be widespread amongst human beings as, up to the present, no human cases have been encountered in Marseilles.

C. M. W.

Nicolle (Charles) & Conor (Marthe). **Difficulté de Conservation du Virus de la Leishmaniose Canine par les Passages.**—*Bull. Soc. Path. Exot.* 1914. June. Vol. 7. No. 6. pp. 481–484.

This paper contains a record of experiments directed towards the maintenance of a strain of leishmania by passage through animals. The virus was obtained from a naturally infected dog in Tunis. This led to the infection of two out of three inoculated dogs, and the probable infection of three out of four inoculated monkeys. (In the case of

the monkeys there was wasting and enlargement of the spleen, though parasites were not found). The second passage was made from the spleen of one of the dogs, and led to the infection of one out of four monkeys inoculated, and none out of three dogs, which unfortunately died of piroplasmosis at a date too early for certain leishmania diagnosis. The third passage from the monkey led to the infection of two mice and one of two monkeys inoculated. The fourth passage was made by inoculating the monkey virus into three monkeys and two mice, none of which became infected. The fourth passage thus proved unsuccessful and demonstrates the difficulty of keeping up a strain of leishmania in experimental animals.

C. M. W.

Tropical Sore.

Sergent (Edm. & Et.), Lemaire (G.) & Senevet (G.). **Insecte Transmetteur et Réservoir de Virus du Clou de Biskra. Hypothèse et Expériences Préliminaires.**—*Bull. Soc. Path. Exot.* 1914. July. Vol. 7. No. 7. pp. 577–579.

The authors have studied the conditions regulating the occurrence of oriental sore in Biskra. They are convinced that some winged biting insect is responsible and believe that Phlebotomus is the most probable transmitter. In Biskra there occur two species—*P. papatasii* and *P. minutus*. As *P. minutus* feeds upon man and also on the gecko (*Tarentola mauritanica*) which is common in the houses of Biskra, the authors instituted an examination of these animals as a possible reservoir for the virus of oriental sore. The enquiry has given the most interesting result that the organs of the geckos inoculated on to culture medium have given, in 15·7 per cent. of cases, a culture of flagellates of the leptomonas type, and very similar to those obtained from oriental sore. The authors have also isolated a leptomonas from the blood of geckos from Béni-Ounif-de-Figuig (South Oranais).

In 14·4 per cent. of cases a culture of trypanosomes was obtained which were quite distinct from the leptomonas, and represent, without doubt, the *Trypanosoma platydactyli*, which was discovered in 10 per cent. of the Biskra geckos.

The authors merely record the observation without committing themselves to any speculations as to the origin or meaning of the leptomonas obtained in culture.

C. M. W.

Giugni (Francesco) & La Cava (Francesco). **Note Cliniche sopra un Focolaio Famigliare di Bottone d'Oriente.** [Clinical Note on a Family Focus of Oriental Sore.]—*Malaria e Malat. d. Paesi. Caldi.* 1914. May-June. Vol. 5. No. 3. pp. 201–204. With 1 plate.

The authors record what appears to be an endemic focus of oriental sore in a single family in which there were seven sons, the youngest of whom was suffering from a typical sore in which leishmania were easily demonstrated. It was ascertained that three of the elder brothers had also suffered from a similar disease when young. The brothers, when examined by the authors, were found to have the characteristic scars of oriental sore. The second case occurred seven

years after the recovery of the first, the third three years after the second and the fourth about eight years later. This observation shows that oriental sore has existed in Bovalino (Calabria) for at least twenty-one years, and naturally raises the question as to whether it was merely a coincidence that the four brothers, who all lived in the same house, should have all contracted the disease, or whether it indicated that there existed in this house some persisting cause in the shape of ectoparasites.

C. M. W.

MANTEGAZZA (Umberto). **Leishmaniosi Cutanea in un Soldato reduce dalla Libia.**—*Malaria e Malat. d. Paesi Caldi.* 1914. May-June. Vol. 5. No. 3. pp. 188–194.

This is a long paper describing a typical case of oriental sore in an adult, a soldier who apparently contracted the disease in the neighbourhood of the town of Tripoli. The chief interest lies in the locality, which appears to be a new one for this disease.

C. M. W.

VIGNAT (Marcel). **Presentation d'un Malade atteint d'une Lésion Ulcéreuse (Bouton de Biskra) ayant résisté Six Ans à Divers Traitements et guérie par une Seule Cautérisation à L'Air Chaud.**—*Bull. Soc. Française de Dermatol. et Syph.* 1914. Apr. Vol. 25. No. 4. p. 194.

The author presented at the Society a case of oriental sore of Biskra of six years standing, which was completely cured by a single exposure to hot air (750° C.) applied after local anaesthesia had been produced by stovaine.

The case had given a positive Wassermann reaction, and had accordingly been treated by twenty-five injections of benzoate of mercury and four grams of potassium iodide per diem by the mouth, without any good results.

C. M. W.

GIUGNI (Francesco). **Due Nuovi Casi di Reperto Colturale della *Leishmania tropica* del Bottone d'Oriente.**—*Malaria e Malat. d. Paesi Caldi.* 1914. May-June. Vol. 5. Nu. 3. pp. 183–185.

In a former note the author has recorded his successful culture of *Leishmania tropica* from a case of Italian oriental sore. He has since had further success in obtaining cultures, from two other cases from Bovalino. The author thinks that better results are obtained if the agar for making the N.N.N. medium is soaked in distilled waer (changed several times) for 24 hours before use, and that there is an optimum temperature of 28° to 29° C. for *Leishmania tropica* in contradistinction to an optimum temperature of 21° to 22° C. for *Leishmania donovani.*

C. M. W.

LAVERAN (A.). **Infections expérimentales de les Souris par la *Leishmania tropica*.—*Comptes Rend. Acad. Sci.*** Vol. 159. p. 539. (Séance du 5 Octobre, 1914).

The author refers to previous work by himself and others which showed that a general infection of mice could be produced by *Leishmania infantum*. In such cases the parasites occurred in the liver, spleen and bone-marrow. GONDER recorded the results of experiments with *Leishmania tropica* in which mice inoculated with cultures developed a general infection, and also lesions of the tail, feet, and ears, in all of which parasites occurred. ROW, on the other hand, produced only a general infection comparable with that produced by the infection of *Leishmania donovani* or *Leishmania infantum*.

In order to control these results Laveran has infected mice intraperitoneally with cultures of *Leishmania tropica* obtained from NICOLLE in Tunis, this being the strain employed by GONDER. In all, twelve mice were inoculated—eight males and four females. Of the males six became infected and of the females none. In all the males infected it was noted that towards the fourth month there was enlargement of the testicle causing an oblong tumour lying across the posterior part of the abdomen. The skin over the tumour in some cases showed slight excoriations. Puncture of the mass yielded a fluid containing enormous numbers of leishmania. Curiously enough no parasites could be discovered in the liver, spleen or marrow, and this in spite of the fact that there was a great enlargement of the spleen.

The author also inoculated three *Meriones shawi* caught in Tunis. The one male amongst them became infected and presented lesions identical with those observed in the male mice.

The tumour is produced not only by the enlarged and lardaceous testicle, but by an enveloping mass of neoplastic tissue in which also the leishmania occur. The parasites are typical *Leishmania tropica*.

The author attributes the difference in his results from those of GONDER and ROW to variation in the method of inoculation, or the virulence of the strain.

C. M. W.

PAVONI (Giovanni). **La Deviazione del Complemento nella Leishmaniosi cutanea.**—*Pathologica*. 1914. May 15. Vol. 6. No. 133. pp. 264–266.

The author has tested the reaction of deviation of the complement in the case of cutaneous leishmaniasis. It is found that the serum of persons infected with extract of spleen and liquid from cultures of leishmania constantly and completely prevent haemolysis, even in very small doses. In an exactly similar manner prevention of haemolysis is brought about by the serum of rabbits which have been treated with dead cultures of *Leishmania infantum*. The results have been controlled by the use of serum of normal human beings and rabbits.

C. M. W.

Jeanselme (M. E.). **Leishmaniose cutanée et Réaction de Wassermann.** —*Bull. Soc. Française de Dermatol. et Syph.* 1914. Apr. Vol. 25. No. 4. p. 194.

The author mentions two cases of oriental sore—one from Biskra and the other from South America—which were examined for the reaction of Wassermann. In both cases this was negative, so that the author concludes that oriental sore does not belong to that group of tropical diseases (yaws, sleeping sickness, leprosy) which may give positive reactions.

C. M. W.

Lindsay (J. W.). **American Forestal Leishmaniasis.**—*Trans. Soc. Trop. Med. & Hyg.* 1914. July. Vol. 7. No. 7–8. pp. 259–263.

The author, who has been resident in Paraguay for fourteen years, makes some remarks upon the dermal leishmaniasis. He mentions that the most common site for the primary ulcer or sore is on the ankles, wrists or hands. The tip of the ear is also a common site, or even the back, or just above where the men wear their belts when stripped to the waist. It is stated that the natives all regard the disease as of a general nature, and that they fear that the disease will "ascend to the nose." The author believes that the idea of general infection is borne out by the fact that the nasal lesions may appear months after complete healing of the primary lesion, where no chance of a second infection has existed.

As regards the mode of infection, the author records the following incident. Eleven years ago work was started in the virgin forest by workers consisting of an overseer and forty peons, amongst whom was one man who had come from lumber works fifty miles to the north. He had a buba ulcer on the leg. Within a year all the other men had contracted ulcers and of all the 41 affected persons, all except one have since developed nasopharyngeal lesions. In nearly every case the patient blames the bite of some insect—either ticks or flies. The ticks (*Amblyomma striatum*) are found adhering to the skin when the peon awakes in the morning. The fly most usually blamed is the Simulium. Both the fly and the tick feed on the rattle-snake, and the natives think that these insects convey the virus from the snakes to man.

C. M. W.

Vianna (Gaspar). Leishmania brasiliensis **als Parasit glatter Muskelfasern.** [L. brasiliensis as a Parasite of Smooth Muscle Fibres.] —*Memorias do Instituto Oswaldo Cruz.* 1914. Vol. 6. No. 1. pp. 40–42. With 1 text fig.

Reference is made to Pedroso's discovery of cutaneous leishmaniasis of dogs in S. Paulo (this *Bulletin*, Vol. 3, p. 557). The author of the note under review received a slide showing a section of the nasal mucosa of an infected dog. In this section leishmania were present, and a careful study showed that the smooth muscle fibres of the arterioles were in places infected with them. The parasites appeared to have very little, if any, ill effect upon the muscle cells, and the author regards this muscle cell infection as showing that the leishmania

are more nearly related to the trypanosomes (*Trypanosoma cruzi*) than has hitherto been supposed. The invasion of these cells further indicates that there must be some mobile flagellate or amoeboid stage of the parasite, which he writes of as *Leishmania brasiliensis.*

C. M. W.

Terra (F.). **Leishmaniose Tégumentaire au Brésil.**—*Boletim da Soc. Brasileira de Dermatologia.* 1913. Vol. 2. No. 2–3. pp. 58–68. With 1 map.

A general description of the cutaneous leishmaniasis of Brazil. The purely cutaneous disease, and the much more serious one in which the mucosae of the nose and mouth are affected, are again described. It has been recorded from all parts of Brazil north of the Tropic of Capricorn.

As regards treatment, the only drug which has given good results is antimony tartrate in 1 per cent. solution in physiological serum, sterilised by filtration through a Berkefeld filter in the cold. Five cubic centimetres are injected on each of five successive days into the vein at the bend of the elbow. The purely cutaneous lesions quickly heal, but the mucosal ones are much more obstinate and require several courses of treatment.

C. M. W.

da Silva (Piraja). **Tratamento da Leishmaniose Cutaneo-Mucosa, pelo Tartaro Emetico.**—*Arch. Brasileiros de Med.* 1914. Apr. Vol. 4. No. 4. pp. 271–280. With 2 plates.

Attention is drawn to the marvellous results sometimes obtained in the treatment of the muco-cutaneous leishmaniasis of South America. The author describes the method of treatment as the "Brazilian method," which consists in the intravenous injection of a 1 per cent. solution of tartar emetic in physiological serum. He has made 500 such injections in various cases, and has never noted any serious symptoms result.

C. M. W.

Lapa (Alvaro). **Deux Cas de Leishmaniose cutanée.**—*Medicina Contemporanea.* 1914. June 28. Vol. 32. No. 26. pp. 203–207. With 5 text figs.

This paper contains a record of two cases of dermal leishmaniasis from Brazil. In one of these the nasal mucosa was involved in addition to the skin. The case with involvement of the nasal mucosa was treated without benefit with salvarsan, the other with intravenous injections of 1 in 100 tartar emetic on alternate days, commencing with a dose of 3 centigrams. Signs of healing were seen after the sixth injection, and cicatrization was complete after three weeks.

C. M. W.

Rebagliati (Raul). **Etiologia de la Uta.**—*Cronica Medica, Lima.* 1914. June 15. Vol. 31. No. 611. pp. 169–172.

The disease, which has been known under various names, such as *Uta* in the Sierra of Peru, *Kjapa* in Montana, *Tiacc-arana* in the mountainous districts of Cuzco and Ayacucho, *Llaga* in Junin, *Gálico* in Amazonas, is now shown by the author to be a form of cutaneous leishmaniasis. In smears from the lesions the author has encountered the various forms of *L. tropica* which have been described from the oriental sore of India and elsewhere. He also claims to have seen flagellated forms, such as are met with in culture of leishmania.

[A paper on the subject of the occurrence of leishmania in Uta by Strong and others was reviewed in this *Bulletin*, Vol. 3, p. 142.]

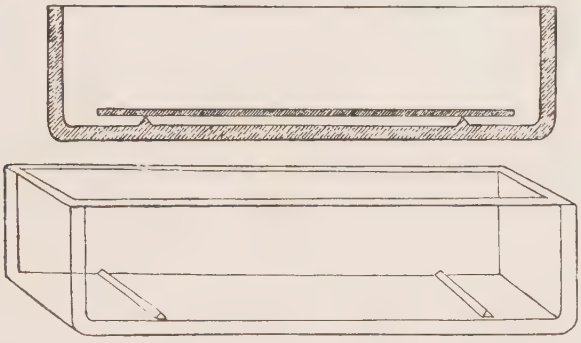
C. M. W.

MISCELLANEOUS.

Giemsa (G.). **Zur Schnellfärbung (Romanowsky-Färbung) von Trockenausstrichen.** [A Quick Staining Romanowsky Method for Dried Smears.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1914. May 2. Vol. 73. No. 7. pp. 493-496. With 1 text fig.

Reference is made to the method devised by the author in 1904 (Giemsa's stain) and also to a quick staining method described in 1910 (*Münchener med. Wochenschr.* No. 47, p. 2476). The details of the present quick staining methods are as follows :—

(1) Air-dried thin smears on slides are laid film side upwards in a dry horizontal staining bath (*vide* diagram).



(2) Eight to fifteen drops of the combined staining and fixing solution (Farbfixierlösung)* are then dropped on the film. Evaporation can be prevented by covering the bath with a glass sheet. The stain is left on for half a minute but on no account longer than one minute.

(3) A little of a mixture of 10cc. distilled water and ten drops of the fixing and staining solution are then added to the stain in the bath. Gentle moving of the bath ensures a thorough mixture of the two. This is left on for ten minutes.

(4) Wash in water, dry and mount, either in liquid paraffin, or in acid free balsam.

By this method malarial parasites and other blood parasites are suitably stained. The whole technique only takes eleven minutes or a little more for completion.

G. C. L.

Giemsa (G.). **Paraffinöl als Einschlussmittel für Romanowsky-Präparate und als Konservierungsflüssigkeit für ungefärbte Trockenausstriche.** [Paraffin Oil as a Medium for Mounting Romanowsky Preparations and as a Preserving Fluid for Unstained Dried Smears.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Vol. 70. No. 7. pp. 444-446.

The fading of aniline or Romanowsky stained specimens in Canada balsam is well known. In order to prevent this the author has

* Azur II–Eosin 3 g, Azur II 0·3 g. in Glycerine 25 g. + Methyl-alcohol 475 g. Warm and mix, then after cooling, filter and allow to stand for a considerable time.

employed paraffin oil (liquid paraffin) for mounting. If the specimens are mounted in this, the stain is retained, and fading does not take place. The method is equally good for preserving unstained dried smears and keeping fungi from growing on them.

G. C. L.

Fricks (L. D.). **Rocky Mountain Spotted Fever. Some Investigations made during 1912 by Passed Asst.-Surg. T. B. McClintic.**—*U.S. Public Health Rep.* 1914. Apr. 24. Vol. 29. No. 17. pp. 1008-1020.

As previously stated [see this *Bulletin*, Vol. 2, p. 103] McClintic unfortunately contracted the disease at the end of 1912 and died of it. He was thus denied the satisfaction of reporting the valuable observations made by him during his last season's work. The author (Fricks) has now collected these observations and prepared them for publication. They include :—" (*a*) the first systematic determination of the percentage of infective ticks from different localities in the Bitter Root Valley, (*b*) the discovery of immune and, therefore, presumably previously infected ground squirrels (*Citellus columbianus*) in nature, (*c*) studies on the susceptibility of the woodchuck (*Marmota flaviventer*), the rock squirrel (*Callo-spermophilus lateralis cinerascens*), and the mountain goat (*Oreamnos montanus*) to Rocky Mountain spotted fever, and (*d*) studies on the efficiency of different dipping solutions used for the destruction of adult ticks on live stock."

(*a*) " In 1912 McClintic collected nearly 2,000 ticks from different localities in the Bitter Root Valley and from Bannock County, Idaho. These ticks . . . were placed in groups on susceptible guinea-pigs and there allowed to feed until completely engorged. . . . Of the total number of ticks collected, 1,570 were actually employed in these experiments and 1,282 were known to have fed a sufficient length of time to infect their hosts." The ticks from the Bitter Root Valley were generally unfed *Dermacentor andersoni* (Stiles) collected from the grass and bushes, and those from Idaho were *Dermacentor modestus* (Banks). A table gives a detailed account of the experiments with the number of positive results obtained.

(*b*) By a series of careful experiments McClintic was able to establish " the existence of immune, and therefore presumably naturally infected, ground squirrels on the west side of the Bitter Root Valley. He also discovered a difference in the percentage of immune squirrels from different localities, which appears to bear a close relation to the degree of Rocky Mountain spotted fever believed to exist in those localities."

(*c*) During 1912 a series of experiments with woodchucks, similar to those performed on ground squirrels, was conducted. The animals were inoculated with a known spotted-fever virus and inoculations of heart blood were made from them after definite intervals into susceptible guinea-pigs. Of the fifteen, eleven were shown to be susceptible to infection with the virus, while three were not so—these may have derived their immunity, the author thinks, from a previous infection acquired naturally. As regards rock squirrels eleven were injected with the virus. Four of these transmitted the infection to

guinea-pigs but the remaining experiments were not completed. [The article stops here abruptly and there is no statement made as to whether it is to be continued or not.]

G. C. L.

NUTTALL (G. H. F.). **"Tick Paralysis" in Man and Animals.**—*Parasitology.* 1914. May. Vol. 7. No. 1. pp. 95-104.

A further series of published records of tick paralysis is given. Cases are described of this disease in sheep in Cape Colony and in man in Oregon, no fewer than thirteen cases being reported from this State. The author comments upon these cases. The finding of ticks on the head in a country where those parasites are common, he believes, might merely be due to a coincidence, but the experimental results obtained by HADWEN on sheep and by NUTTALL and HADWEN on the dog show that we are dealing with a definite affection. No particular species of tick appears to be concerned in the causation of tick paralysis, since *Dermacentor venustus* in British Columbia and *Ixodes pilosus* in South Africa both appear capable of inducing this affection. The author suggests further investigation to elucidate the nature of the disease and to determine what species of ticks are capable of producing it.

G. C. L.

LINNELL (R. McC.). **Note on a Case of Death following the Sting of a Scorpion.**—*Lancet.* 1914. June 6. pp. 1608-1609.

The patient was stung by a scorpion on the left heel and for the cure of this his friends had made him eat the head of the scorpion. On the fourth day after receiving the sting, paralysis of the legs set in, spreading up to the umbilicus. Sensation was unaltered. On the sixth day there was retention of urine and on the ninth day sugar appeared in the urine. On the thirteenth day the patient became comatose and death intervened on the fifteenth day. No full autopsy was permitted but a piece of spinal cord was examined at the Medical Research Institute, Kuala Lumpur. Microscopically the cord was found to be affected with acute disseminated myelitis. The scorpion in question was a small brown specimen which the natives declare to be very vicious and deadly. Although scorpions' stings are fairly common in the Malay States, deaths are extremely rare.

G. C. L.

BREINL (Anton). **Preliminary Report on the Journey to New Guinea—June to August, 1912.**—*Papua Annual Report for the Year 1912-13.* Printed and Published for the Government of Australia by Albert J. Mullett, Government Printer for the State of Victoria. Appendix "B". pp. 155-158.

Malaria.—The most prevalent disease seen in New Guinea was malarial fever. Cases were found in abundance in every district visited and the disease was equally prevalent amongst the white settlers and amongst the natives.

Dysentery.—"Although malaria is the most prevalent disease epidemic dysentery is of much greater economic importance. . . . A perusal of the early yearly reports seems to indicate that the disease has been introduced into New Guinea at a comparatively recent period."

Leprosy.—Cases of true leprosy were found only in two districts: Mekeo and the Trobriand Islands. Both forms, nerve leprosy and nodular leprosy, were encountered.

Gangosa.—"One of the most interesting diseases observed was Gangosa (Rhinopharyngitis ulcerosa). One case of this disease was found in the Samarai Hospital and several cases in the villages along the south coast, the greatest number in Kerapuna. Numerous cases were also observed in the Mekeo District."

The disease as a rule "begins with the formation of ulcers in the neighbourhood of the nose and on the upper lip. At first an oedematous swelling is noted which afterwards ulcerates, the ulceration, as a rule, progressing into the cavity of the nose, destroying the cartilaginous septum and attacking the hard and soft palate. In the latest stages the nose has completely disappeared." The disease is peculiar to the South Sea Islands and to certain parts of the east. Cases have been observed in Guam, in Manila, etc., and a number of patients suffering from the same disease were encountered on Murray Island on the occasion of a visit made by the author to the Torres Straits Islands in 1910.

Beriberi.—A few cases of true beriberi were seen. Syphilis, yaws, ulcerative granuloma and sores of various sorts were also met with, whilst skin diseases offer a most interesting field for investigation. *Tinea imbricata* is especially common.

G. C. L.

SCHMITTER (Ferdinand). **Quarterly Report of the Board for the Study of Tropical Diseases as they exist in the Philippine Islands.**—*Military Surgeon.* 1914. Mar. Vol. 34. No. 3. pp. 222-228. With 3 text figs.

After Major ASHBURN left Manila the author remained as the only member of the Board on duty. Two cases of gangosa were observed; both gave the Wassermann reaction. A positive reaction was also obtained by the luetin test, but this was mild in comparison to the vigorous reaction usually seen in cases of syphilis with similar extensive lesions. This suggests to the author that the reaction in gangosa is that of a related organism rather than of the *Treponema pallidum*. In tissue removed from the ulcerating margins *Treponema* similar to *pallidum* or *pertenue* were observed. He concludes that the weight of evidence is in favour of gangosa being a form of yaws and that it is due to a *Treponema* morphologically resembling that found in the latter disease.

Seven cases of sprue were studied; two of these had a history of syphilis while the others gave negative reactions to the Wassermann test. Repeated examinations of scrapings of mouth ulcerations failed to show any spirochaetes with the dark-field illuminator. Examinations of the stools were also negative. Cultures were made from the mouth ulcers and two peculiar streptothrices were obtained.

Twenty-five cases of leprosy were studied clinically and microscopically. Experiments were also carried out for the purpose of finding a prophylactic against scurvy.

G. C. L.

Castellani (Aldo). **Report of Investigation Work carried out at the Clinic for Tropical Diseases and Bacteriological Institute, Colombo, Ceylon, during the Period extending from 1st July 1913, to 31st January 1914.**—Report to the Advisory Committee of the Tropical Diseases Research Fund. Received in Colonial Office March 14, 1914.

Researches were carried out on the following subjects :—

(1) Cases of fever due to *Bacterium columbense* (Cast. 1905).
(2) *Vibrio kegallensis* (Cast. 1913).
(3) Further researches on the mixed typhoid + paratyphoid A + paratyphoid B vaccine.
(4) Further case of entoplasmosis.
(5) A probably new type of ulcerative dermatitis.
(6) Skin disease with gummata, due to a fungus.
(7) A peculiar yellow pigmentation of the skin.

(1) The organism was named in 1905, but in subsequent publications the author has identified it wrongly with *B. paratyphosus B.* Recently, having had the opportunity of isolating the same germ again in two cases, he has decided that it is a separate species; therefore the name *B. columbense* holds.

Clinically the cases were very similar to typhoid, the fever lasting from three to five weeks and ending by lysis. In one case there were several relapses.

(2) *Vibrio kegallensis* is the name given to a vibrio which was isolated from the stools of a patient of Kegalle suffering from a cholera-like diarrhoea.

(3) Further researches are detailed of a vaccine made with typhoid, paratyphoid A and paratyphoid B. The conclusions reached after these new researches are that it is highly desirable to use—instead of the usual simple typhoid vaccine— the mixed typhoid + paratyphoid A + paratyphoid B vaccine in countries where the three diseases are met with.

(4) Another case of what the author has termed entoplasmosis has been met with in a passenger from Burma. The patient complained of severe griping pains and diarrhoea with muco-pus and blood in the stools. Protozoal bodies identical with those described in a previous report were found [see this *Bulletin*, Vol. 3, p. 464].

The other investigations are interesting to dermatologists. In the new type of ulcerative dermatitis described the lesions are painful and very slow to heal, complete spontaneous cure seldom taking place in four to six months ; on healing, patches of hyperpigmentation often remain. As regards "yellow disease," the bright yellow colour is quite different from what one sees in jaundice ; moreover the sclerotics remain white, the urine and stools are of a normal colour, the condition of the liver is normal and the general health quite good. On the hypothesis that the condition might be parasitic Castellani tried a

formalin spirit lotion, but the most successful measure consisted in sending the patients up country where the pigmentation disappeared almost completely.

G. C. L.

Kernéis. **Pian, Likoutombo (Fièvre éruptive spéciale), Béribéri au Moyen Congo. Extrait du Rapport annuel de 1912.** [Clinique d'Outre Mer.]—*Ann. d'Hyg. et Méd. Colon.* 1914. Jan.-Feb.-Mar. Vol. 17. No. 1. pp. 229-233.

The treatment of yaws by '606' is first mentioned; favourable results—as have now been so frequently reported from other parts of the world—were obtained.

A peculiar eruptive fever which the natives call Likoutombo was studied. The malady commences with an angina, together with nasal and ocular catarrh and fever. The latter often attains to 40·3° C. but more generally remains about 38·5°. The temperature lasts only about a day and when it subsides the ocular nasal catarrh also becomes better. On the third day of the illness an eruption composed of small papules appears, this giving the skin a shagreen appearance. The eruption appears at first on the face but afterwards spreads rapidly to the whole of the body. The exanthem lasts one or sometimes two days, a furfuraceous desquamation then appearing. The total duration of the disease is from four to six days. It is not serious, nor have any complications been noted. The conditions resembles measles somewhat closely and is contagious; children however are not more attacked than adults. [Could the condition be a variety of dengue ?]

Beriberi. The natives of the Congo do not like rice and only consume it very rarely; this, according to the author, explains the rarity of beriberi. If on the other hand in the absence of manioc or maize Indo-Chinese rice is used, beriberi quickly develops. A small epidemic, from this cause, occurred at Brazzaville in May 1912.

G. C. L.

Masterman (E. W. G.). **Notes on some Tropical Diseases in Palestine.** —*Jl. of Hygiene.* 1914. Apr. Vol. 14. No. 1. pp. 1-11. With 1 plate and 1 chart.

The paper forms a continuation of one published in the *Journal of Hygiene*, [see this *Bulletin* Vol. 2, p. 106].

Enteric fever, typhus fever, Jericho boil and ulcerative stomatitis are now dealt with, while there is a supplementary note on malaria. Typhus fever is probably a very much commoner disease in Jerusalem than has been supposed. It usually occurs during the colder months; in the past such cases have often been called malignant remittent malaria. A series of cases is described clinically. In these there was a typical crisis about the fourteenth day and in most there was a definite rash.

Jericho boil is a synonym of tropical sore. New-comers visiting Jericho during the summer months, especially during August and September, are very liable to acquire the disease. Residents having had it in childhood are now immune. The author himself on a visit in the hot season got half a dozen boils about his legs and arms.

He draws a distinction between Jericho boil and Aleppo boil; he believes that the lesions of the former are as a rule more superficial in character than the latter and do not lead to such deep scarring. An examination of skin sections for Leishman-Donovan bodies was not successful.

A form of ulceration of the mucous membrane of the mouth (ulcerative stomatitis) occurs commonly in children and young people, sometimes also in pregnant women. The lesions consist of elongated ragged ulcers with deep red edges and sloughy white bases, which form especially at the junction of the mucous membrane of the gums and that of the lip. A case is mentioned where the condition went on until it assumed the characteristic appearance of cancrum oris.

In the supplementary note on malaria a chart gives the results of blood examinations of fever cases attending the clinics connected with the English Hospital, Jerusalem, during a whole year commencing September 24, 1912. The most striking feature brought out is the entire disappearance of malignant malaria during the early spring. The few cases occurring in February, March and June are usually importations from the hot maritime plains or from the Jordan valley, where this form of the disease occurs at all seasons.

Dr. Cropper informs the author that the list of anophelines quoted in the earlier paper (*loc. cit.*) is incorrect in that *Pyretophorus superpictus* was omitted, and that *P. palestinensis*=*Cellia pharoensis*.

G. C. L.

Maynard (G. D.). **Report on Prevalence of Pneumonia amongst Natives in their Tropical Habitat.**—*S. African Med. Record.* 1914. May 23. Vol. 12. No. 10. pp. 155-159.

The paper is a preliminary report and only deals with broad results and general impressions, a detailed discussion of the data collected being left to a later period. Cases of pneumonia were found amongst natives in their home areas, and a strain of organisms apparently identical with the pneumococcus was isolated.

On arrival in Salisbury the author was able to study the morbidity and mortality statistics of the native labour supply of Southern Rhodesia. A large number of interesting problems were determined, the most obvious of these being as follows :—

" 1. By far the highest pneumonia rates occur amongst the natives recruited from Northern Rhodesia.

" 2. The next highest rates are found amongst the natives from British Central Africa.

" 3. The lowest rates occur amongst local natives, i.e., residents of Southern Rhodesia.

" 4. The death rates from pneumonia in the various labour districts show considerable variations, even when corrected for the racial constitution of the populations.

" 5. Large differences in the pneumonia rates are found from mine to mine, after due allowance has been made for the racial constitution of the populations.

" 6. Speaking generally, the lowest death rates from pneumonia apparently occur on mines with a complement of under a hundred native miners. They become progressively and rapidly worse as the number employed increases to 300 ; at this point they fall to rise again as the number is further increased to 700. Mines employing over this number are so few that individual differences would overshadow any general rule which might otherwise be deduced. The death rates from " other diseases "

do not follow this rule, and apparently are unconnected with the number of natives employed, i.e., there is no obvious relationship between the rates and the number of natives employed.

"7. A very striking fall in the pneumonia rate has taken place in 1913. The pneumonia death-rate for all natives in 1912 was 19·4 per thousand, and in 1913 approximately 12·3 per thousand; this is a reduction of 37 per cent. The death-rate from "other diseases" has not exhibited a similar fall, being 11·4 per thousand in 1912, and 11·1 per thousand for 1913. This fall in the pneumonia rate has occurred in all the territorial groups of natives except in a small group of under 1,000 natives headed "others." The fall in the rate amongst Southern Rhodesian natives was 38 per cent., Northern Rhodesian natives 41 per cent., Portuguese natives 40 per cent., British Central African natives 29 per cent." G. C. L.

Sitsen (A. E.). **Verslag over 173 Lijkopeningen, verricht aan de S. T. O. V. I. A. te Weltevreden.** [An Account of 173 Post Mortem Examinations.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1914. Vol. 54. Pt. 2. pp. 191-203. With 2 tables.

An account of 173 post mortem examinations made by the author at Batavia, Java, between November, 1909 and May, 1913. The causes of death are given in a table (Table I), at the end of the paper, the principal ones being as follows in order of frequency:

Croupous pneumonia, 26; Tuberculosis (including phthisis), 21; Amoebic dysentery, 10; Tumours, 7; Syphilitic affections of blood vessels, 6; Heart disease, 5; Peritonitis, 5; Beriberi, 5; Typhoid fever, 4; Septicaemia, 3; Non-syphilitic affections of blood vessels, 3; Cerebro-spinal meningitis, 2.

The remainder were surgical.

55 subjects were of European nationality, 45 being males and 10 females; 21 were Chinese, 19 males and 2 females; Javanese 96, 83 males and 13 females; and one Japanese, female. J. B. N.

Hehir (P.). **Ulcerated and Swollen Gums in Indian Troops.**—*Trans. xvii Intern. Congress of Med.*, London. 1913. Section xxi. Trop. Med. & Hyg. Part 2. pp. 121-123.

The condition described in the title is frequently associated with some denudation of the epithelium of the tongue and with a greater or less degree of oral sepis. The pathological state is one of ulceration with suppuration of the margins and inner surfaces of the gums. It occurs chiefly during the hot summer and early autumn months when the men are run down from the effects of the hot weather or possibly from an inadequate supply of fresh vegetables. It is more common in Hindoos than in Mohammedans. It is not associated with dental caries. As a rule the men are unconscious of its existence. Unlike pyorrhoea alveolaris, it is in the early and intermediate stages curable by local applications. In the final stage a large area of the gums of both jaws is involved. The author writes that the condition tends to create a vulnerability of the mucous membrane of the alimentary tract to invasion by one or other strains associated with bacillary dysentery and epidemic infective diarrhoea. The state of the gums is similar to that sometimes seen in the incipient stage of land scurvy in the poorer classes in India. It may be a pre-scorbutic condition. The author has met with over 2,000 cases in the last six years.

A. G. B.

LIST OF REFERENCES.

[Continued from BULLETIN, Vol. 4, pp. i-xxx.]

For the benefit of recipients of the Bulletin who wish to make a **Card Catalogue,** or to preserve a consecutive record of the references on any subject the Director is willing to supply **galley proofs** [*'Korrekturbogen.'; 'Première'*] of the **Quarterly Lists of References** (printed on one side of the page) at the subscription price of **Two Shillings per annum.** Application should be made direct to the **Bureau.**

AMOEBIASIS (including Entamoebic Dysentery and Liver Abscess.)

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[Favourable results were obtained with hypodermic emetine in nine cases. A good account of the history of ipecacuanha and its vicissitudes as a medicament is given].

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